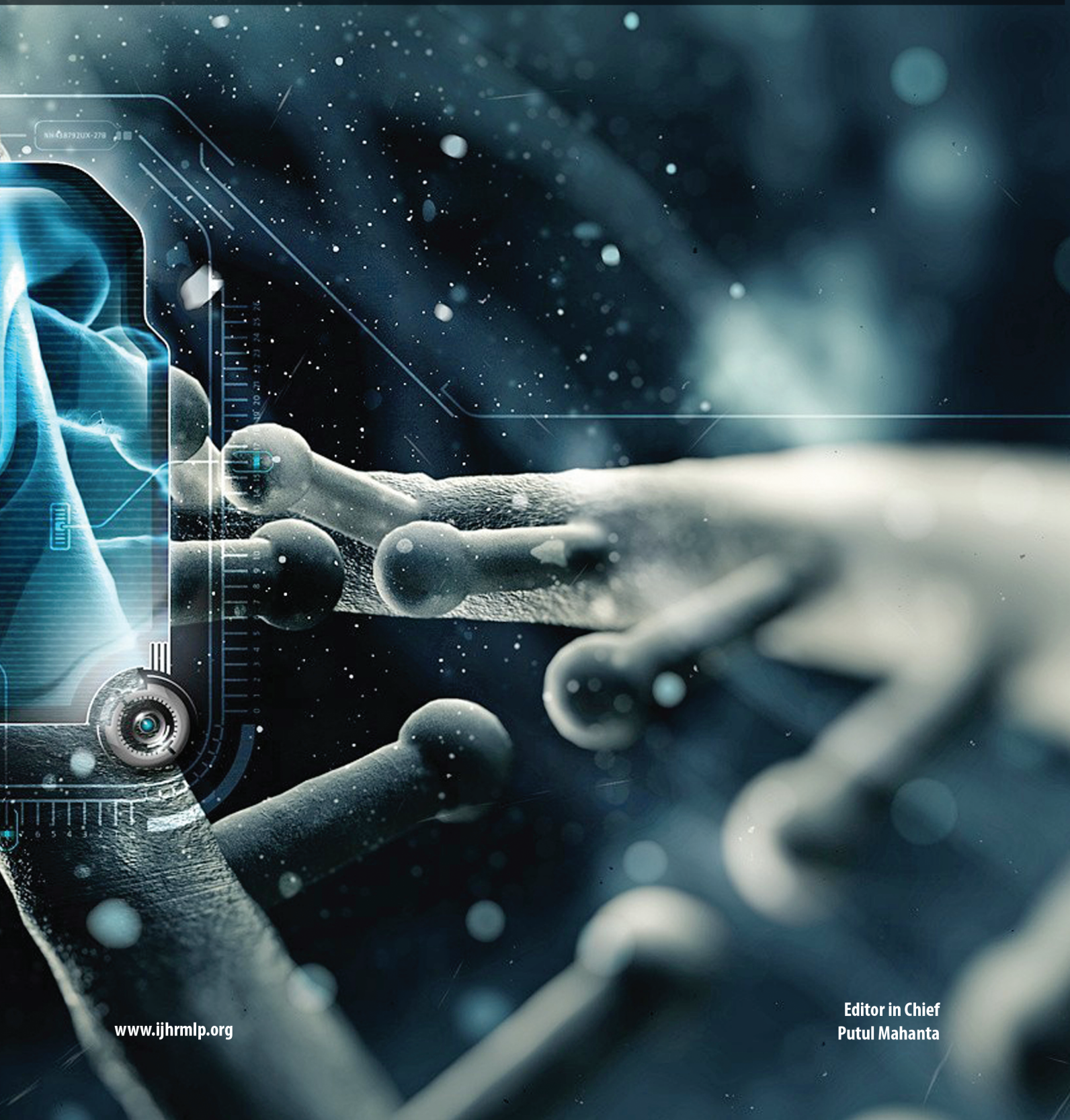
ISSN 2394–806X
Volume:01/ No:02 /June, 2015

International Journal of Health Research and Medico Legal Practice



www.ijhrmlp.org

Editor in Chief
Putul Mahanta

Grand release of first issue of IJHRMLP by hon'ble DME cum president of Asam Sahitya Sabha Prof. Dhruba Jyoti Borah, Prof. N.C. Bhattacharyya, Prof. K.L. Talukdar, Prof. Homeswar Sarmah and Prof. Rajendra Kr. Kalita on 22nd February 2015 at Hotel Rajdhani Regency, Dispur, Guwahati, Assam

Learned delegates present on the occasion of grand release of first issue of IJHRMLP on 22nd February 2015 at Hotel Rajdhani Regency, Dispur, Guwahati, Assam

ISSN 2394–806X

IJHRMLP

Volume:01, No:02 (June, 2015)

Official publication of North Eastern Centre for Human and Urban Development (NECHURD)

Registration No. RS/KAM/240/K/232 of 2000-2001

International Journal of Health Research and Medico Legal Practice

Editorial Board

ISSN 2394–806X

IJHRMLP

INTERNATIONAL JOURNAL OF HEALTH RESEARCH AND MEDICO LEGAL PRACTICE

Volume:01, No:02 (June, 2015)
Also available free online: www.ijhrmlp.org

AIMS AND SCOPE

Welcome to the "**International Journal of Health Research and Medico Legal Practice**" (IJHRMLP). IJHRMLP is the official publication of North Eastern Centre for Human and Urban Development, (NECHURD), Registration No. RS/KAM/240/K/232 of 2000-2001, published six monthly in January and June every year and a peer-reviewed journal.

This international journal is as dedicated to the upgradation of health sciences and related disciplines (including medicine and its allied subjects; surgery and its allied subjects; Pre and Para-clinical subjects; Dentistry; Ayurveda; Pharmacy; Nursing; Biotechnology; Cell and molecular biology; and related public health engineering fields).

MISSION STATEMENT

The IJHRMLP pursues exceptionally to inspire multidisciplinary research and collaboration among experts, the industry and the healthcare specialists. It also provides an international forum for the communication and assessment of data, methods and findings in health sciences and linked disciplines.

The journal publishes original research papers, reviews, clarifications and case reports on current topics of special interest and significance and international health news. All manuscripts are subjected to rapid peer-review and only those of high quality are published without any delay.

COPYRIGHT

Registered Office Address:
IJHRMLP, H/N-1, Karmabir Bordoloi Path, Wireless, Rukmini Nagar, Dispur-06, Assam, India
Phone: 09435017802, Email: hrmlpractice2014@gmail.com

ISSN 2394–806X

IJHRMLP

VOLUME:01, NO:02 (JUNE, 2015)
Also Available free online: www.ijhrmlp.org
Official publication of North Eastern Centre for Human and Urban Development, (NECHURD)

CONTENTS

EDITORIAL

Dilemmas at the Beginning of Life: Medico Legal Issues with the Newborn
Mahanta Putul 1-2

REVIEW PAPERS

Consent for Treadmill Test (TMT) and Issue of Medical Negligence
Yadav Mukesh 3-7

Patient Doctor Relationship: Changing Paradigm, Challenges and Strategies
Verma Sunil 8-13

Conventional Methods of Incision and the Cosmetic Autopsy Incision : Its advantages
Mamata Devi Haloi, Mrinal Haloi, Amarjyoti Patowary 14-18

Mini Nutritional Assessment: An Evidenced Based Screening Tool for Identifying Geriatric Malnutrition
Saikia Kaberi 19-24

ORIGINAL PAPER

A Spectrum of Benign Gall Bladder Diseases and their Laparoscopic Management: An experience of 100 patients
Ganguly Narendra N, Kumar Gautam 25-31

Nutritional Status and its Relationship with Substance use Behavior among Adolescents Slum dwellers of Guwahati
Bardhan Tanusri, Saikia Anku Moni, Baruah Rupali 32-35

Study on Changes in Serum Adenosine Deaminase Activity in Patients with Hepatitis
Bora Keshab, Das Dipali 36-40

Knowledge and Practice of Staff Nurses on Palliative Care
Begum Sorifa, Khanam Mosphea 41-45

Third Coronary Artery – An Autopsy Study
Yadukul S, Sumangala CN, Chandragirish C, Chandrashekar TN 46-49

Public Attitudes Toward Organ Donation, Autopsy and Anatomic Dissection- A Prospective Study
Mahanta Putul, Rajbangshi Madhab Chandra 50-53

A Comparative Study of Electrocardiographic Changes and Blood Glucose Level in Athletes and Non-Athletes
Dutta Nandita, Dutta Choudhury Biju, Nath Neena, Saikia Anku Moni 54-58

Treatment of Clubfoot by Ponseti Method: Our Experience
Talukdar Dhrubajyoti, Bhattacharyya Tulasi Das, Dey Sukalyan, Dutta Nayanmoni[4], Baruah Siddhartha[5] 59-63

Awareness and Utilization of Village Health and Nutrition Day (VHND) services 'A Community Based Study'
Barua Kabita, Baruah Rupali, Saikia Anku Moni 64-69

CASE REPORT

Cerebellar Hemangioma: **Advanced Imaging**
Phukan Pranjal, Handique Akash, Kakati Arindom, Khonglarh Yookarin, Sarma Kalyan 70-74

Uterine Choriocarcinoma: **A Diagnostic Challenge (A rare case)**
KJ Jeevitha, P Devaki, Rathna Ramamurthy, Raja Rajeshwari S 75-78

Spindle Cell Liposarcoma: **A Rare Variant of Liposarcoma Arising in Forearm with Ulceration**
Kalita Chayanika, Kalita Lohit kumar, Ali Ahmed, Sarma Umesh Chandra 79-82

A Case Report of Two Unusual Complications Following Intracesarean Insertion of IUD
G Kavitha, B Renukadevi, Ramamoorthy Rathna, S Rajarajeshwari 83-86

Aggressive Primary Neuro Ectodermal Tumour in Kidney: A Rare Entity
Barua Sasanka Kumar, Bordoloi Hrishikesh, TP Rajeev, Sarma Debanga 87-89

Extramarital Affair claims Child's Life
Dalal Deepsekhar, Dey Arijit, Biswas Sujash, Das Abhishek, Bandyopadhyay Chandan, Banerjee Molly 90-93

Cytological Diagnosis of Multiple Myeloma Presenting as Unilateral Pleural Effusion: A Rare Case Report
Kalita Lohit kumar, Kalita Chayanika, Gogoi Pabitra Kumar, Sarma Umesh Chndra 94-97

A Treatment Refractory Case of Taenia Saginata in a Tertiary Care Hospital
Dina Raja, Chimanjita Phukan, Naba Kumar Hazarika 98-101

International News 102

List of founder life member of IJHRMLP 103

List of life member of IJHRMLP 104

Published by NECHURD
H/N-1, Karmabir Bordoloi Path, Wireless, Rukmini Nagar, Dispur-06, Assam, India

ISSN 2394–806X

IJHRMLP

Volume:01, No:02 (June, 2015)

Official publication of North Eastern Centre for Human and Urban Development, (NECHURD)
No. RS/KAM/240/K/232 of 2000-2001

INTERNATIONAL JOURNAL OF HEALTH RESEARCH AND MEDICO LEGAL PRACTICE

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

EDITORIAL

Dilemmas at the Beginning of Life: Medico Legal Issues with the Newborn

INTRODUCTION

Perhaps the most burdensome medical decisions, because of their solemnity, are those that involve the medical treatment of newborns at the begining of their life, with life-threatening diseases or anomalies, because such decisions are troubled with ethical and legal dilemmas. Effective communication between the medical team and the newborn's parents is very vital in this regard.

Ethical issues in the newborn have been described since Biblical times. King Solomon's legendary wisdom was demonstrated by his resolution of the ethical dilemma presented by two women who both claimed to be the mother of the same child.[1] Today, medico legal experts are often called upon to find out truth from near-truth and obstetrician and gynecologist to act in the best interest of the newborn, while also respecting the parents' right to make medical decisions for their child. Upsetting this delicate balance can lead to explosive showdowns between parents, health care teams, and the state legislations.

Here, some of the ethical and legal dilemmas integral in newborns care, with a focus on end-of-life care will be discussed. Attentions will be given on how ethical and legal issues arise when treatment is made for newborns. More importantly, special issues will be discussed on how health care providers can avoid ethical and legal confrontations in day to day practice in present day time.

LEGAL DILEMMAS

Two chief legal disputes[2] faced by medical professionals who treat newborns at the limits of viability, or those suffering from life-threatening or lethal syndromes or congenital anomalies are as follows:

i. The health professional must be aware about the rules of the land, which detail when it is appropriate to remove life-sustaining treatment.

ii. The health professional should be aware of the availability of legal options should it become necessary for them to take action to protect the newborn as an when required.[2]

A medical professional treating a newborn that has life threatening ailments or is at the limits of viability might disagree with the medical decisions made by the parents against the favor of the newborn, but might not know which legal principles apply in their patient in that particular situation.

Although the hospital and health care team have legal options at their disposal, if they feel the parents are not making decisions in the best interest of the newborn as per the law, it is best to avoid such legal evasive actions, and to view them as a final option only after the health care team and the parents have explored all other options.

AVOIDING LEGAL CONFLICT

As yet all medical decisions that are tempered with ethical and legal thoughtfulness, avoiding legal conflicts in the treatment of newborns are ideal. To accomplish this goal, it is imperative that the health professionals and the parents communicate effectively to build up a very strong doctor patient relationship.

The model for strong doctor parent relationship depends whether identification of a life-threatening or congenital anomaly occurs prior to or after delivery. First, it is sitting upon the neonatologist to ensure that the parents have a comprehensive understanding of the existing condition. If parents cannot appreciate the implications of the existing condition, they may not process for a crucial decision.

After the existing condition is identified and the parents understand it, the bulk of the discussions will focus on the information that is known (and unknown), and its implications for the neonate (including morbidity and mortality rates or ranges).[2]

The health professionals should also discuss the accessibility of perinatal palliative care services, if appropriate**.** These discussions will enable them and the parents to develop a guideline for treatment during the peripartum period. Parents must understand that the agreed guidelines as discussed are subject to modification at any time as more information becomes available beforehand. Since the intervention and treatment guidelines are flexible, the health professionals and the parents must constantly communicate with each other so that any disagreements between them can be identified and dealt with before treatment. Thus, legal obligations can be avoided during the procedures.

An area of frequent concern is the documentation because of its tremendous legal implications. Failure to obtain informed consent, failure to perform appropriate telephone triage, inadequate staffing, improper delegation, and failure to assess the patient properly or in a timely manner as deviations that may increase doctor liability in a malpractice claim.[3] The treating team has a duty to maintain a complete and accurate recording of all care they provide in accordance with acceptable standards of care. Remember that the patient treatment record is the best evidence of the care you provide.[4]

Legal issues in Newborn Screening: **Implications for Public Health Practice and Policy**: There are lots of legal issues in newborn screening with tremendous implications for public health practice and policy.

An estimated 4 million newborns are screened every year for one or more genetic and metabolic disorders. At the same time, the number of tests required under state law differs, and the standard of practice among health professionals can vary from community to community. State newborn screening laws vary in the nature of their newborn screening mandates, as well as in the number of tests covered, anywhere from four to 40 tests.[5]

CONCLUSIONS

End-of-life decisions when life begins are taking by the treating doctors and the parents. Treating doctors must respect the parents' right to make medical decisions for their own kids, but they should also be aware of their legal options based on the medical information available, that the parents are not making medical decisions in the best interests of the newborn as per the existing law.

At the end, conflicts surrounding the interventions and treatment of newborns occur in two situations. The first is when the doctors believe that further treatment is incompatible and unethical, but parents demand continued treatment. The second is when the doctors believe continued treatment is compatible, yet the parents demand to end to all medical interventions. The conflicts can be avoided only with a very strong doctor parent relationship which is one integral part of the treatment.

REFERENCES

1. The Holy Bible, King James Version, I Kings 3:16-28.
2. Christopher M. O'Connor, ESQ., Kevin N. Lorah. Dilemmas at the Beginning of Life: Biomedical Ethics in the Newborn. The J of Lancaster General Hospital 2008;3(3):102-104.
3. Juretschke LJ. Overview of legal issues in nursing. Program and abstracts of the National Association of Neonatal Nurses 23rd Annual Conference; September 26-29, 2007; San Diego, California.
4. Dunn PA, Gies ML, Peters MA. Perinatal litigation and related nursing issues. Clin Perinatol. 2005;32:277-290.
5. National Newborn Screening and Genetics Resource Center. U.S. national screening status report, updated 3/18/05. [cited 2005 Mar 24]. Available from: URL: http://www.genes-r-us.uthscsa.edu/resources/newborn/reports.htm.

Editor-in-chief
Putul Mahanta MD FIAMLE
hrmlpractice2014@gmail.com
www.ijhrmlp.org

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CRITICAL REVIEW

Consent for Treadmill Test (TMT) and Issue of Medical Negligence

Yadav Mukesh*

Received *on March 07/2015;* ***accepted*** *(revised) on March 14/2015;* ***approved*** *by author on May 11/2015*

ABSTRACT

Hon'ble SC in a case [Spring Meadows Hospital and Anr. Vs. Harjot Ahluwaliaand Anr. (1996)] observed that with the emergence of the Consumer Protection Act, no doubt in some cases patients have been able to establish the negligence of the doctors rendering service and in taking compensation thereof, but the same is very few in number.

In recent days there has been increasing pressure on hospital facilities, falling standard of professional competence and in addition to all, the ever-increasing complexity of therapeutic and diagnostic methods and all this together are responsible for the medical negligence. There has been a growing awareness in the public mind to bring the negligence of such professional doctors to light.

*This paper deals with critical analysis of one such case in which a patient died during Treadmill Test due to medical negligence of doctors/hospital. NCDRC (**National Consumer Disputes and Redressal Commission)** awarded a compensation of Rupees Seventeen Lac after analysis and discussing issues related to 'lack of consent', res ipsa loqutur, lack or precautions to be taken, etc.*

The aim of writing this paper is to highlight issues which may lead to medical negligence, medical fraternity should be aware of legality and complexity involved in such life saving and life threatening medical interventions/procedures.

Keywords*: TMT, NCDRC, Medical Negligence, Compensation, Res Ipsa Loqutur*

INTRODUCTION

The Hon'ble Apex Court in Spring Meadows Hospital and Anr. Vs. Harjot Ahluwalia and Anr. (1996)[1] has observed as under "In the case in hand we are dealing with a problem which centres around medical ethics and as such it may be appropriate to notice the broad responsibilities of such organizations who in the garb of doing service to the humanity have continued commercial activities and have been mercilessly extracting money from helpless patients and their family members and yet do not provide the necessary services. The influence exhorted by a doctor is unique. The relationship between the doctor and the patient is not always equally balanced. The attitude of a patient is poised between trust in the learning of another and the general distress of one who is in a state of uncertainty. Such ambivalence naturally leads to a sense of inferiority and it is therefore, the function of medical ethics to ensure that the superiority of the doctor is not abused in any manner."

Hon'ble Supreme Court clarified that it is a great mistake to think that doctors and hospitals are easy targets for the unsatisfied patient. It is indeed very difficult to raise an action of negligence.[1] Not only there are practical difficulties in linking the injury sustained with the medical treatment but also it is still more difficult to establish the standard of care in medical negligence of which complaint can be made.

Address for correspondence and reprint:
*Director/Principal/Dean
Siddhant School of Medical Science and Hospital
Manipuri, U.P.
Mobile: 08527063514
Email: drmukesh65@yahoo.co.in

All these factors together with the sheer expense of bringing a legal action and the denial of legal aid to all but the poorest operate to limit medical litigation in this country.[1]

In recent times there has been an increasing pressure on hospital facilities, falling standard of professional competence and in addition to all, the ever-increasing complexity of therapeutic and diagnostic methods. All these together are responsible for medical negligence.[1] There has been a growing awareness in the public mind also, a reason to bring the negligence of such professional doctors to light.

BRIEF FACTS OF THE CASE[2]

Facts of the case, in brief, are that complainant No.1, Shri S.N. Verma(husband) and the complainants no 2 and 3 are son and daughter respectively of Late Smt. Sunita Verma, who was 47 years old at the time of her death. She was taken to Indraprastha Apollo Hospital for a whole body check-up (W.B.C.) on 02.04.1999.

Complainant was asked to fill-up a form, in which, he inter-alia filled-up the name of the patient, name of the guardian and address and also the name of the doctor (Dr. Khursheed Anwar) who had referred the case.

Allegations of Medical Negligence (It was submitted)

- That a healthy woman died during the course of the Treadmill Test which proves that there was gross medical negligence of the doctors/staff of the hospital.
- That the stand taken by the opposite parties that the patient did not give information relating to her past medical history is absolutely wrong. Full details of the past history were given along with medical records issued by the earlier doctor, Dr. Anwar who had treated the patient.
- That before conducting the TMT, reports of the doctors/staff of the hospital in respect of the earlier tests conducted by them were not evaluated. If it was done, it would have revealed whether the patient was fit enough or not for TMT.
- That only a technician was present during the TMT though it is claimed by the opposite parties that Dr. Indermeet was present. Neither, he has filed his affidavit nor his qualifications have been revealed.
- As there was no doctor in the TMT room, the patient was not asked to stop exercising as soon as ECG changes appeared or symptoms of chest pain or discomfort or breathlessness were felt as the result of which she collapsed during the TMT.
- That apart from TMT report and ECG report, no other hospital records were given to the complainants though a special messenger Mr. Kalu Ram was sent as per the directions of the Director/Medical Superintendent who was requested to make available the test report.
- She categorically refused to give the test reports of the other tests and also did not acknowledge the receipt of the letter-dated 07.06.1999.

Issues for Considerations before National Consumer Disputes and Redressal Commission:

Following issues emerged for consideration before the NCDRC:

1. **Issue of Medical History**
2. **Issue of Qualified Doctor, Protocol and Precautions for TMT**
3. **Issue of Consent**
4. **Issue of Medical Record**
5. **Issue of proper Evaluation of patient**
6. **Issue of Res Ipsa Loquitur**
7. **Issue of Compensation**
8. **Issue of making Necessary Parties to suit**

In this paper only issue no.1 to 6 will be discussed in details and Issue No.7 and 8 will not be discussed.

ISSUE OF MEDICAL HISTORY

It was submitted that if the patient does not give past history, it is not possible for the doctor to assess the condition of the patient who may appear absolutely normal at rest. He has relied upon Extract of the book[3] is quoted below:

"*It is not possible to anticipate and prevent the rare instance when a small coronary artery plaque insufficient to produce detectable ischemia during even minimal exercise, may be the site of sub-intimal haemorrhage result in dislodgement occlusion of the vessel causing infarction or death. This can cause a morbidity of 10 in one lac and mortality of 0.24 in one lac.*"

NCDRC observed that it was the case of the opposite parties that no previous history was given by the patient. This averment is not true for the simple reason that a perusal of the report of the Gynecology test dated 02.05.1999 reveals irregular long cycles, four abortions, menopause four months back and previous medical history nil. This is contradictory. The previous medical history cannot be 'nil', as the patient has revealed irregular long cycles, four abortions and menopause four months back.

ISSUE OF RES IPSA LOQUITUR

According to the defendant hospital, **it is not a fit case to apply the principle of *Res ipsa loquitur*.** Therefore, a mere accident due to gross negligence of the complainant himself would not make him eligible to receive compensation. It was further submitted that moreover doctors are not Gods and their treatment is based on their specialized knowledge in their particular field of study. NCDRC relying Supreme Court judgment [1] observed that gross medical mistake would always result in a finding of negligence. Use of wrong drug or wrong gas during the course of anesthetic will frequently lead to the imposition of liability and in some situations even the principle of Res ipsa loquitur can be applied. Even delegation of responsibility to another may amount to negligence in certain circumstances. A consultant could be negligent where he delegates the responsibility to his junior with the knowledge that the junior was incapable of performing of his duties properly. We are indicating these principles since in the case in hand certain arguments had been advanced in this regard, which will be dealt with while answering the question posed by us. A perusal of the anaesthesist's notes indicates Dr. Ghosh tried that pacemaker. He did not mention the presence of Dr. Indermeet in his report at all. A perusal of the TMT report shows the technician's name as Gloria. There is no mention of the name of Dr. Indermeet. A doctor is superior to the technician. If he was present, his name would have definitely figured in the TMT report. Hence, it is not possible to believe that Dr. Indermeet was present during the TMT.

The opposite parties have admitted that at the time of conducting TMT, shortness of breath was noticed and the patient was unfit for TMT as a result of which she died. Therefore, it is clear that if a doctor would have been present in the TMT room, the life of the patient could have been saved.

In this case it is clear from the records that the patient collapsed at the TMT. During TMT, no qualified doctor was present. The responsibility of a doctor cannot be delegated to a technician. Hence, this case falls under the category of *Res ipsa loquitur* (facts speak for themselves). NCDRC observed that this is a clear case of medical negligence on the part of Indraprastha Apollo Hospital and the treating doctors.

ISSUE OF QUALIFIED DOCTOR, PROTOCOL AND PRECAUTIONS FOR TMT

NCDRC observed that in the case under consideration instead of a qualified doctor in the TMT room, only a technician was present. The death of the patient had occurred within the closed doors of the hospital room. NCDRC opined that therefore, the ratio of Spring Meadows Hospital and Anr. Vs. Harjot Ahluwalia and Anr. (1996) [1] case is squarely applicable to the case under consideration.

The complainant quoted HeartSite.com, **extract** of which reads as follows: *"**When is a Regular Stress Test ordered?** A regular stress test is considered in the following circumstances:*

- *Patients with symptoms or signs that are suggestive of coronary artery diseases (CAD)*
- *Patients with significant risk factors for CAD.*
- *To evaluate exercise tolerance when patients have unexplained fatigue and shortness of breath.*
- *To evaluate blood pressure response to exercise in patients with borderline hypertension.*
- *To look for exercise-included serious irregular heartbeats.*

The above factors were not considered in this case by the hospital before TMT was ordered. He further quoted the extract of the Apollo Clinic Koramangala, Bangalore case. List of pre-conditions before patient undergoes stress test, which are as follows: *"The following recommendations are "generic" for all types of cardiac stress tests:*

Do not eat or drink for three hours prior to the procedure. This reduces the likelihood of nausea that may accompany strenuous exercise after a heavy meal. Diabetics, particularly those who use insulin, will need special instructions from the physician's office.

Specific heart medicines may need to be stopped one or two days prior to the test. Such instructions are generally provided when the test is scheduled. Wear comfortable clothing and shoes that are suitable for exercise. An explanation of the test is provided and the patient is asked to sign a consent form. How long does the entire test take? "A patient should allow approximately one hour for the entire test, including the preparation."

NCDRC concluded that none of these preconditions were complied with and the opposite parties took none of these precautions. NCDRC observed that it is seen from the referral of Dr. Khursheed Anwar, Consultant Physician dated 05.04.1999 that there was no request for TMT (page 84 of the paper book).

Affidavit shows only the name of the technician. On the other hand, Dr. P.K. Ghosh, Sr. Consultant Cardiologist in his report at para-6 has submitted as follows: *"**I ran to the TMT room from CCU and reached immediately before anybody else**. As I saw the patient was having a systole and needed emergency pacing, I found it no point in trying to continue resuscitation in the TMT room. Hence, I got a stretcher immediately and rushed the patient to the emergency triage which was the nearest and the quickest reachable place where all facilities are available."* This clearly means that Dr. Ghosh was the first doctor to reach the TMT room.

ISSUE OF CONSENT

Despite this, the patient was asked to undergo TMT before AHMC consultant conducted a detailed physical examination. Before conducting the Treadmill Test, neither consent of the patient was obtained in writing nor it was explained to her the risks involved in undergoing the TMT though it is stated in the affidavit by Dr. (Mrs.) Ritu Rawat as follows: *"As far as TMT is concerned, before it is done, every patient is described what the test involves, asked if the patient has any specific complaint and clearly told to her/him about the risks involved."*

There is no record to show that the risks involved in TMT were explained to the deceased and her signature was obtained in the consent form. A photocopy of the consent form pertaining to Mrs. Sunita Verma is at page 130 of the paper book. First half of this form pertains to patient registration record. Second half pertains to authorization (consent) for operation and treatment.

This is neither signed by the patient nor by her guardian though it is claimed that the consent was obtained. In the Written Submission (WS) filed by the opposite parties Nos.1 and 2 is wrongly stated as follows: *"The WBC was started only after taking due consent from the patient as per hospital protocol applicable to her and sent for the procedural tests with due care."*

NCDRC referred to Supreme Court judgment Samira Kohli Vs. Dr. Prabha Manchanda and Anr. 2008[4], in which it is observed as follows:

"Consent that is given by a person after receipt of the following information: the nature and purpose of the proposed procedure or treatment; the expected outcome and the likelihood of success; the risks; the alternatives to the procedure and supporting information regarding those alternatives; and the effect of no treatment or procedure, including the effect on the prognosis and the material risks associated with no treatment. Also included are instructions concerning what should be done if the procedure turns out to be harmful or unsuccessful."

In was also observed as under: *A doctor has to seek and secure the consent of the patient before commencing a 'treatment' (the term 'treatment' includes surgery also). The consent so obtained should be real and valid, which means that: the patient should have the capacity and competence to consent; his consent should be voluntary; and his consent should be on the basis of adequate information concerning the nature of the treatment procedure, so that he knows what is consenting to.*

NCDRC observed that the patient or her guardian neither signed the consent form. It is clear from this case that no valid or informed consent was taken from the patient before she was subjected to TMT, which involves serious risk. Therefore, it is a clear case of medical negligence.

ISSUE OF MEDICAL RECORD

NCDRC observed that replies given by the complainant substantiate the stand that no doctor was present in the TMT room. It also gives credence to the claim of the complainant that opposite parties have deliberately not given the hospital records to him.

In the written submission, the opposite parties have said that a copy of the available medical record of the patient have been filed, which means that certain other medical records, were there but they have not been made available to the commission.

NCDRC observed that Medical Council of India (MCI)[5] has stipulated that the treatment records of the patient alongwith discharge certificate or death certificate should be issued within 72 hours of the death/discharge. In this case the death certificate does not bear any date. These reports were not supplied to him. NCDRC observed that this action of the OPs invites adverse inference.

Issue of Compensation: The NCDRC awarded amount of Rs.17 lakhs by the opposite parties with 9% interest from the date of filing of the complaint till the date of payment. Opposite parties were also directed to pay Rs.15000/- as cost of complainant. NCDRC taken consideration of case law on the issue referred by the parties.[6, 7, 8]

SUMMARY AND CONCLUSIONS

It is also important to note that Dr. Khursheed Anwar has not recommended TMT. NCDRC also pointed out discrepancies in the death certificate issued by Dr. Sandeep Khurana of the Indraprastha Apollo Hospital. The age of the patient has been written as 40 years though she was 47 years old at the time of her death and all records of the hospital show that she was 47 years old.

Secondly, cause of death is written as "? **Sudden Cardiac Death**". No information is given about the collapse at the Tread Meal.

NCDRC raised following questions:

"Why this question mark was put before cause of death? Why was collapse of TMT not mentioned?"

There is need to create awareness on the part of doctors and health administrators to introspect on issues involving threat to life and provide quality of healthcare involving patient/relatives in the decision making after taking informed consent.

Ethical principles framed by the MCI[5] in its regulations of maintaining medical records and supplying to patient/ authorized representatives whenever demanded goes in favor of doctors/hospitals in case of suit for medical negligence.

REFERENCES

1. Spring Meadows Hospital and Anr. Vs. Harjot Ahluwalia and Anr. (1996) 4 SCC 39.
2. R.K. Batta, Presiding Member, NCDRC, Dr. P.D. Shenoy, Member, NCDRC, S.N.Verma (Husband of late Smt.Sunita Verma) and others vs. Indraprastha Apollo Hospitals and another, New Delhi, O.P.59 of 2000, National Consumer Disputes Redressal Commission, New Delhi Order dated 4.1.2010, [cited 2015 March 3]; Available from: URL:http://164.100.72.12/ncdrcrep/judgement/00OP5900.html
3. Risk of exercise testing In: Braunwald's Text Book of Cardiology III Volume: p.238.
4. Samira Kohli vs. Dr.Prabha Manchanda and Anr. 2008 AIR 1385.
5. The Indian Medical Council (Professional Conduct, Ethics and Etiquettes) Regulations, 2002. r.1.3 [Online] Medical Council of India [cited 2015 March 3]; Available from: URL:http://www.mciindia.org/RulesandRegulations/CodeofMedicalEthicsRegulations2002.aspx
6. Savita Garg (Smt) vs. Director, National Heart Institute (2004) 8 Supreme Court Cases 56.
7. Joginder Singh vs. Dr. Rajeev Kumar Majumdar IV (2009) CPJ 9 (NC).
8. Nizam Institute of Medical Sciences vs. Prasanth S. Dhananka and Ors. Civil Appeal No. 4119 of 1999; – II (2009) CPJ 61 (SC) decided on 14.5.2009.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

REVIEW PAPER

Patient Doctor Relationship: Changing Paradigm, Challenges and Strategies

Verma Sunil*

Received *on January 05/2015;* ***accepted*** *(revised) on April 12/2015;* ***approved*** *by author on May 11/2015*

ABSTRACT

The patient doctor relationship is a vital concept in health care. A good relationship increases adherence to treatment recommendations, enhances continuing care and promotes patient satisfaction. It has been researched in terms of communication, interpersonal skill of the doctor, mutual trust, ethics, health literacy. Doctor has always held disproportionate power over patient, particularly in India. Classic paternalism in their behavior is rule rather than exception. The low doctor-population ratio in India puts a tremendous strain on the available medical facilities and restricts the time available for doctors to interact with patients. There are reasons why doctors do not explain in detail to the patient about diagnosis, treatment planned or expected prognosis. Not providing information to patients is a clear violation of their rights. Rights of patient must be complimented with their responsibilities. There is need to formulate patient charter in all health care facilities.

Keywords*: Patient doctor relationship, ethics, patient rights and duties, patient charter*

Address for correspondence and reprint
*155 Base Hospital, Army Medical Corps
Tezpur, Assam. PIN: 784001
Email: sunil8260@gmail.com
Mobile: 9954858633

INTRODUCTION

The patient doctor relationship has been and remains a keystone of care. It is a medium in which medical data is collected, diagnosis and plans of treatment are made, compliance is ensured, patient activation and rehabilitation support is provided.[1] The relationship between doctors and patients has received philosophical, sociological and literary attention since the times of Hippocratus, Caraka and Susruta and other sages.[2] A congenial relationship increases adherence to treatment recommendations, enhances continuing care and promotes patient satisfaction with health care and self-reported health.[3, 4] This relationship, however is not balanced. The patient's attitude is a complex of trust, which comes from perceived competence and integrity of doctor, and paradoxically, also that of distrust, which comes from the state of uncertainty and vulnerability.

The relationship between patient and doctor is fiduciary, i.e., physicians are expected to act in their patient's interests, even when those interests may conflict with their own. In addition, the doctor patient relationship is remarkable for its centrality during life-altering and meaningful times in person's life, time of birth and death and during severe illness. An incompetent doctor is judged not merely to be a poor businessman, but also morally blameworthy, as having not lived up to the expectations of patients and having violated the trust that is essential and moral feature of doctor patient relationship. Trust is a fragile state. Deception or even minor betrayals are given weight disproportionate to their occurrence, probably because of their vulnerability of the trusting party.

Modern medicine has come to rely on a battery of tests to come to a diagnosis even for the basic clinical condition. Sub specialization produces a breed of doctors whose aim is to know more and more about less and less. A patient comes to a doctor with a hope that he will be treated holistically and not as an organ or system. Modern patient assumes two identities, one as health consumer and other as active participant in the medical decision-making process. This phenomenon has created an environment where consumer demand for information has shifted from a single focus on symptoms, diagnosis and treatment to an increasing preoccupation with cost, quality and access to health care.

HISTORICAL PERSPECTIVE: CHANGING PARADIGM

In the earlier age, the physician's role was paramount, consisting of comfort and healing.[5] Care was substituted for cure, as physician had little else to offer. A strong bonding relationship existed between physician and patient, based upon trust and faith. Oliver Wendell Holmes rightly commented, "Choose a physician, as you would a friend." Majority of doctor-patient meeting took place in patient's home and not in an office or hospital.[6] This admittedly idyllic state reflected a relationship characterized by paternalism and dependency. Patients were often considered to be too ignorant to make decisions on their own.

Role of the doctor, as friend, mentor and fount of medical counsel, has declined over the ages. Patients sought information elsewhere, with the result that the physician is no longer the sole, authoritative gatekeeper of medical information. They have become consumers and have turned to other information sources. The medical profession, increasingly isolated and alienated from patients, complains of neurotic and overly demanding patients who make lists of irritating questions.[7] Low doctor-population ratio in India puts tremendous strain on available medical services and constrains the time available for doctors to interact with patients.[8] However, not providing information to patients about their diagnosis, course of treatment and prognosis is clear violation of their rights.

Physicians, in India, have always held disproportionate power over their patients. Classical paternalism in doctor's behavior is rule rather than an exception.[9] Datyeet al[10] conducted a survey on patient-physician communication around HIV testing, and identified a number of gaps between practice and guidelines. They attributed it to the existing social and legal contexts of the physician-patient interaction in India.

MEDICAL INTERVIEW- A LOST ART

The medical interview is a major medium of the health care. It is major interface between care provider and care seeker. It has three functions and fourteen structural elements, as elucidated in **Table 1**. The three functions are gathering information, developing and maintaining therapeutic relationship and communicating information.[11] It is a major influence on doctor and patient satisfaction and is a major determinant of compliance to treatment plan. Increasing data suggests that patients who are encouraged to ask question during medical interview tend to participate in their care which eventually results in better patient satisfaction.

Effective use of the structural elements of the interview gives patient a sense that they have been heard and allowed to express their major concerns[12] respect, caring[13] and understanding. It also allows patients to express and reflect their feelings and relate their stories in their own words.[14]

Table 1 Function and elements of medical interview

Functions
1. Determine and monitor the nature of problem
2. Develop, maintain and conclude the therapeutic relationship
3. Carry out patient education and implementation of treatment plans
Structural elements
1. Prepare the environment
2. Prepare onself
3. Observe the patient
4. Greet the patient
5. Begin the interview
6. Detect and overcome barrier of communication
7. Survey problems
8. Negotiate priorities
9. Develop a narrative thread
10. Establish the life context of the patient
11. Establish a safety net
12. Present findings and options
13. Negotiate plans
14. Close the interview.

MODELS OF PATIENT DOCTOR RELATIONSHIP

In North America and Europe, there are four models that define doctor patient relationship.[15] These are as follows:-

(a) Paternalistic model
(b) Informative model
(c) Interpretive model
(d) Deliberative model

In Paternalistic model, best interests of patient, as judged by clinical expert, are valued above the provision of comprehensive information and decision-making power to patient. The informative model, by contrast, sees patient as consumer who is in best position to decide for him/herself. It views the doctor mainly as provider of information. The interpretive model has shared decision making mechanism. Physician helps the patient to interpret complex medical evidence and its relevance to patient's illness. The deliberative model is one where both the physician and patient deliberate on the best course of action.[16] There is obviously some overlap among interpretive and deliberative models. Their relationship can be classified as shown in **Table 2** with scores for its components.[17]

Table 2 Models of Patient doctor relationship with its scoring

Model	Level of patient autonomy	Level of physician's decision	Level of moral Deliberation
Classical paternalist	Low score	High score	Low score
Modern paternalist	Low score	High score	High score
Autonomist	High score	Low score	Low score
Deliberationist	High score	Low score	High score

Vaisman[18] suggested that the deliberative model is most suitable model on the basis of the three key principles of ethics, viz., autonomy, beneficence and justice.

INFORMED CONSENT, PATIENT DECISION MAKING: A CRITICAL REVIEW

Failure to obtain consent constitutes refusal by physician to respect the autonomy of patient. However, in order to be consent to be truly relevant and for patient to be autonomous, consumers must first achieve a reasonable level of understanding through education, information, and explanation.

There are two models for integrating informed consent into the clinical practice of medicine.[19] The "event model" of informed consent treats medical decision making as an isolated act that takes place at one point of time, usually before treatment. The "process model" integrates informed consent at all stages of medical decision making, requiring continuous care by the physician and active participation by the patient. 'Event model' is ubiquitous in clinical practice but 'Process model' reflects a recognition that medical decisions are rarely made at one point in time and active participation of patients is required in decision making process, with their physicians. Many a times, obtaining consent is viewed only as a necessary formality to avoid a malpractice suit. Green[20] argues that introducing consent forms just before treatment and well after making decisions, undermines the role of the form in the shared decision making process and perpetuates adversity.

Critics have labelled informed consent as charade.[21] Explanation is given readily but it fails to provide the basis for an intelligent choice of available options to patient. Katz[21] believes that patients "hear in doctors' recommendations and not reflections of their own wishes, but the physician's wishes and hopes". What passes as disclosure and consent is so often an attempt by physicians to shape the disclosure process so that patients will comply with their recommendations. In this manner, informed consent represents a legitimization, by the patient, of the doctor's unilateral professional decision.

FACTORS AFFECTING DOCTOR PATIENT RELATIONSHIP

A series of organizational factors affect the doctor patient relationship. The accessibility of personnel, both administrative and clinical, and their courtesy level provides a sense to patient that they are important and respected, as do the reasonable waiting times and attention to personal comfort. The availability of courteous staff, nurses and doctors instill a sense of security. User friendly education materials create an atmosphere of caring and concern.

Standardization of practice, sometimes relying on 'evidence based medicine,' is often used to minimize costs or maximize or ensure quality of care. It is often touted as promoting fairness by treating the individuals in like manner. Both standardization and application of evidence based principles in choosing care standards however rely

on value judgements about what counts as good evidence and how it should be interpreted and applied. The danger to the doctor patient relationship in these movements is that individual patient with their individual needs and preferences may be considered secondary to following practice guidelines, thus leading to a situation where patient may be compelled to feel being treated like an inanimate participant. Such a scenario has potential to spoil doctor patient relationship.

PATIENT RIGHTS IN INDIA: AN ANALYSIS

Patient doctor relations can be defined by the amalgam of rights of patients, their responsibilities and Code of Ethics Regulations (COER) as enunciated by MCI in 2002.[22] Disease management association of India (www.dmai.org.in) have drafted a document which entails patient rights and their responsibilities.[23] This draft document is validated by NABH. It is an open secret that there is hardly any intrinsic respect for patients' rights in India. If they are violated, the only recourse for patients is to approach the consumer courts. Prominent features of patient rights, responsibilities and code of ethics are given in **Table 3**.

Table 3 Salient features of Patient rights, responsibilities and COER 2002

Patient rights	**Patient responsibility**	**COER, 2002/ Doctor's code of practice**
I deserve respectful care from my doctor	I will maintain healthy habits and take responsibility for my health	I will provide a printed schedule of my fees for office visits, procedures, testing and surgery. (Para 1.8, 3.7 COER, 2002)
I would like to be heard to my satisfaction	I will be respectful to doctors and medical staff	I will schedule appointments to allow the necessary time to see you with minimal waiting time and listen to you without interruption. (Para 3.3 COER, 2002)
I would like to get complete information about my medical problem	I will be honest with my doctor and disclose my family/medical history	I will encourage you to bring a friend or relative into the examining room with you
I would like to be educated, so I can provide informed consent	I will do my best to comply with my doctor's treatment plan	I will facilitate in getting you medical records. (Para 1.3, 7.2 of COER, 2002)
I would like my privacy to be respected	If I am not happy, I will inform my doctor	I will explain your prognosis and further diagnostic activity and treatment. (Para 2.3 COER, 2002)
I want confidentiality to be maintained	I will do my homework so that I can participate intelligently	I will prescribe information therapy and discuss your diagnostic, treatment and medication options,to allow you to make a well-informed decision. (Para 7.16 COER,2002)
I would like my doctor to provide me with options, so that I can select	I will not ask for padded bills and false certificates	I will inform you of my qualifications to performthe proposed diagnostic measures or treatment. (Para 1.4.2,7.20 COER, 2002)
I expect my doctor to write prescription legibly and explain me the dosage, dos and don'ts and genericoptions for drugs	I will understand my medicines	I will inform you of organizations, support groups, websites and publications that can assist you
I would like to be informed of hospital rules and regulations	I will be punctual for my appointment	I will not proceed until you are satisfied that you understand the benefits and risks of each alternative and I have your agreement on a particular course of action. (Para 7.16 COER,2002)
I would like information on whom to contact in case of an emergency	I will pay my bills on time	I will display the patient charter prominently in my facility

Patient rights	Patient responsibility	COER, 2002/ Doctor's code of practice
I would like information about fees	I will abide by the hospital/facility rules	
I would like a copy of my medical records	I will have realistic expectations from my doctor and his treatment	

TOWARDS A NEW DOCTOR PATIENT RELATIONSHIP

There exists a dilemma among the health care providers whether patients are to be treated as consumers or they are still to be treated with the sense of altruism and paternal attitude. Patients are definitely consumers and they have to be treated like one. Dynamics of patient doctor relationship must also be viewed through the prism of economics. A positive correlation exists between information and satisfaction, and between satisfaction and compliance. Patients who are encouraged to participate in their own health care are more likely to volunteer information, elicit the best in a practitioner, receive better care, and get better faster with less treatment.[24] Benefits that can result from the improved flow of information include enhancing the accuracy of medical history taking, facilitating patient compliance with therapeutic regimens, increasing patient satisfaction and improving patient's physiologic and psychological response to therapy.[25, 26]

The doctor patient interview is the foundation of clinical process. Two distinct narrative emerge out of it i.e, the patient's story, which is the original motivating account that the sick person narrates to physician and medical account (metastory), constructed by physician from selected, augmented parts of the patient's narrative. These two versions of the same story can warp mutual understanding and impede communication.[27] A new alliance between physicians and patients, based on co-operation rather than confrontation, must be universally adopted. Patient centered care has to replace a one sided, physician dominated relationship. Such an alliance must take into account not only the application of technical knowledge, but also dissemination of information to assist the patient to understand, control, and cope with overpowering emotions and anxiety. Mutual participation, respect, and shared decision making must replace passive submission.

REFERENCES

1. LipkinM Jr, Putanam SM, Lazare A. editors. The Medical interview: Clinical care, education and research. New York (NY): Springer Verlag; 1995.
2. Goold Susan Darr, Lipkin M Jr. The doctor patient relationship challenges, opportunities and strategies. University of Michigan Medical centre, Ann Arbor, Mich (SDG) and New York University Medical centre, New York (NY): 1997.
3. Schneider U, Ulrich V. The physician–patient relationship revisited: the patient's view. Int J Health Care Finance Econ 2008;8(4):279-300.
4. Chou PL, Lin CC. Cancer patients adherence and symptom management: the influence of the patient-physician relationship. Hu Li ZaZhi 2012;59(1):11-15.
5. Rees Alan M. Communication in the physician patient relationship. Bull Med Libr Assoc 1993 Jan;81(1).
6. Rothman D. Strangers at the bedside. New York (NY): Basic Books; 1991. p. 112.
7. Burnum JF. La maladie du petit papier: Is writing a list of symptoms a sign of an emotional disorder? N Eng J Med 1985 Sep 12;313(11):690-1.
8. Ghooi RB, Deshpande SR. Patients' rights in India: an ethical perspective. Indian J of Med ethics 2012 Oct-Dec;9(4):277-281.
9. Solomon S, Solomon SS, Ganesh AK. AIDS in India. Postgrad Med J 2006;82:545-7.
10. Datye V, Kielmann K, Sheikh K, Deshmukh D, Deshpande S, Porter J, et al. Private practitioners' communications with patients around HIV testing in Pune, India. Health Policy Plan 2006 Sep;21(5):343-52.
11. Lazare A, Putnam SM, Lipkin M Jr. The three functions of the Medical interview. New York (NY): Springer-Verlag; 1995. p. 3-19.
12. Stewart MA, Brown J, Levenstein J, Mc Craken E, Mc Whinney IR. The patient centered clinical method: changes in resident's performance over two months of training. Fam practice 1986;3:164-7.
13. Peabody FW. The care of patient. JAMA 1927;88:877-82.
14. Orth JE, Stiles WB, Scherwitz L, Hennrikus D, Vallbona C. Patient exposition and provider explanation in routine interview and Hypertensive patients' blood pressure control. Health Psychol 1987;6:29-42.
15. Emanuel EJ, Emanuel LL. Four models of the physician-patient relationship. J Amer Med Assoc 1992;267 (16):2221-6.

16. Charles C, Gafni A, Whelan T. Decision-making in the physician-patient encounter: Revisiting the shared treatment decision-making model. Soc Sci Med 1999;49(5):651-61.

17. Falkum E, Forde, R. Paternalism, patient autonomy, and moral deliberation in the physician-patient relationship: Attitudes among Norwegian physicians. Soc Sci Med 2001;52(2):239-48.

18. Vaisman A. Comparing physician-patient relationship models. Univ Toronto Med J 2008;85(3):139-45.

19. Lidz CW, Appelbaum PS, Meisel A. Two models of implementing informed consent. Arch Intern Med 1988;148:1385-9.

20. Green JA. Minimizing malpractice risks by role clarification: the confusing transition from tort to contract. Ann Intern Med 1988 Aug 1; 236.

21. Katz. The silent world of doctor and patient. New York (NY): Macmillan; 1982. p. 99.

22. The Indian Medical Council: MCI; c2010. [cited 2015 Mar 03] (Professional conduct, etiquette and ethics)Regulations, 2002. 2002 Mar 11. Available from: URL:http://www.mciindia.org/RulesandRegulations/ Code of MedicalEthicsRegulations2002.aspx

23. Disease management association of India. Patient rights and charter [cited 2015 Apr 06]. Available from: URL:http://dmai.org.in/PatientCharter%20DMAIPDF.pdf)

24. Rom DL. Patient participation in the patient-provider interaction: the effect of patient question asking on the quality of interaction, satisfaction and compliance. Health EducMonogr Winter 1977;5(4):288.

25. Waitzkin H, Stoeckle JD. The communication of information about illness.AdvPsychosomMed 1972;8:187-8.

26. Bowman M. Good physician-patient relationship improved patient outcome? J FamPract 1991;32(2):135-6.

27. Donnelly WJ. Righting the medical record: transferring chronicle to story. JAMA 1988 Aug 12;260(6):823.

HOW TO WRITE REFERENCES

1. References should be typed single-spaced and numbered consecutively in the order in which they are cited in the text as superscript.
2. In-text reference: Arabic numerals, viz., ……[1, 2, 3] …… should be used in citing references in the text. The in-text reference number should be Superscript without bracket and after the full stop. All the text reference numbers should be bold and highlighted with green color for easy cross check by editorial board (……. ……[1, 2, 3, 4] …..).
3. List of references: *Bullet should not be used while numbering the references, rather number them manually.*
4. Only Vancouver style is accepted, nothing else.
5. For ready reference please visit at www.ijhrmlp.org.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

REVIEW PAPER

Conventional Methods of Incision and The Cosmetic Autopsy Incision : Its Advantages

Mamata Devi Haloi[1], Mrinal Haloi[2], Amarjyoti Patowary[3]

***Received** on April 05/2015; **accepted** (revised) on March 30/2015; **approved** by author on May 13/2015*

ABSTRACT

The three conventional methods of incision have few drawbacks especially when we have to detect any injury in the back of the body. Without any colour changes in the skin externally or in cases of burn where any colour change in skin cannot be determined, there may be hidden injuries on the back, which can be thoroughly visualized by using the fourth incision, i. e., the cosmetic autopsy incision.

One of the advantages while using the cosmetic autopsy incision is that the long and prominent stitch mark in front of the body is not there in this incision.

***Keyword**: Autopsy, Incision, Injury, Cosmetic Autopsy Incision*

Address for correspondence and reprint:
[1]Post Graduate Student
Department of Forensic Medicine, Jorhat Medical College and Hospital, Jorhat
[2]Demonstrator, [3]Associate professor (**Corresponding Author**), Department of Forensic Medicine, Gauhati medical college and Hospital Guwahati
Email: drajpatowary@gmail.com
Mobile: 9435018221

INTRODUCTION

Medico-legal autopsy examination is a special type of examination of a dead body to find out the cause and nature of death examining all the body parts, organs with opening of all the body cavities to corroborate with the evidences of eyewitnesses as per laws of the land towards administration of justice and prosecution of guilty.[1] For any sudden, suspicious and unnatural death, medico-legal autopsy is a must. But, the facilities and necessities for doing such investigation are not satisfactory in our set up till date. So, we must be cautious in selecting an incision; it should be such that, it shows all the details of whole circumference of the body along with all the body cavities. When we use the conventional methods of incision, the posterior portion of body is not visualized, which can be visualized thoroughly if we use the fourth or cosmetic autopsy incision.

Although consent from guardian is not necessary for performing medico-legal autopsy, we the forensic people often have to deal with the agony of the relatives of the deceased in the autopsy hall. Most of the time, the relatives if given a chance, refuse for autopsy of their near and dear ones, because of the look after the procedure with a long stitch mark in front. But, we cannot restrict ourselves just to satisfy the relatives of the deceased since our foremost duty is to help the judiciary in disbursement of justice. So, we should adopt a mean that will not only help the law enforcing agencies but also satisfy the relatives of the deceased. In this regard the fourth incision is the only way out by which we can provide maximum possible information in regards of injury to the law enforcing agencies, and at the same time satisfy

the marooned relatives as the stitch marks are not visible from the front and at the same time the whole circumference of the body is visualized which is not possible in other methods.

METHODS IN PRACTICE[2, 3, 4, 5, 6, 7, 8]

Three different types of incisions conventionally used for opening the neck, thorax and abdomen are:

1. "**I**" **Shaped Incision**
It starts from symphysis menti and extends straight to symphysis pubis right or left to umbilicus.
Disadvantages of this incision is the prominent stitch mark in front of neck, thorax, abdomen and also the neck structures especially in the back of neck are not visualized.

2. "**Y**" **Shaped Incision**
Starts at a point close to the acromion process extending downwards below the breast and across to the xiphoid process in both sides, then from the xiphoid process,the incision is extended downwards to the symphysis pubis. Here, visualization of neck structure is very poor but in this incision the stitch mark in front of the neck is absent.

3. Modified "**Y**" **Shaped Incision**
Starts behind the user to midclavicular point bilaterally, then carried out over the clavicle to suprasternal notchand then a straight incision to symphysis pubis in midline.
Disadvantage here is also the prominent stitch mark in front of neck and poor visualization of back of neck though exposure of the neck structure in front of neck and to some extent the side of neck is better.

DRAWBACKS OF THESE INCISIONS

- Hidden injuries of posterior aspect of body are not visualized in all these incisions for confirmation of any suspected injury on the back, separate incisions are to be made at places. But many a time it is very difficult to distinguish between postmortem staining and bruises and also for injuries inflicted just before death and in dark complexion persons.
- For examination of spinal cord, we have to make a separate incision on the back.
- In cases of burn it is impossible to detect a bruise or any injury in deeper tissues of the back of the body as the posterior aspect of body cannot be visualized and so there is every chance that we may miss some important evidences of injuries on the back.
- In cases of death due to torture, in police custody or any suspicious death due to violence, it is not possible to examine the posterior aspect of the body with the conventional methods of incision. So, the chance of omitting injuries in the back become eminent.
- An important drawback is the seepage especially from the abdominal cavity as the cavity is closed in a single layer. We Indians always obey the religious rules and regulations. So, after taking the body from the mortuary when the close relatives prepare the body for last right, the seepage from the body imparts a negative impact on them.

THE FOURTH INCISION[9, 10, 11, 12]

To overcome from all these drawbacks,we can use the fourth incision, i.e., the Cosmetic Autopsy Incision. By using this incision we can expose both the front as well as the posterior aspect of the body and at the same time hide the stitch marks in the front of the body.

STEPS OF THE INCISION

The process starts from the posterior aspect of the body**.**
A. To expose the posterior aspect of body:
1. Positioning of body: The body is placed in prone position with a wooden block under the shoulder, so that the neck is flexed anteriorly (**Figure 1**).

2. Incision on the back:
a. As in the conventional method, an incision in the scalp is made from one mastoid process to the opposite mastoid process in coronal plane (**Figure 2**).
b. From the mastoid process incision is extended along the posterior aspect of the sternocleido mastoid muscle and then through the posterior border of trapezius to the posterior aspect of acromion process bilaterally (**Figure 3**).
c. Then a curved incision is made along the medial border of shoulder joint from the tip of the acromion up to the mid axillary line in the axilla; the same incision is repeated on the opposite side also.
d. Then from the mid axillary point in the axilla the incision is extended in mid axillary line to iliac crest on both sides (**Figure 4**).


Figure 1


Figure 2


Figure 3

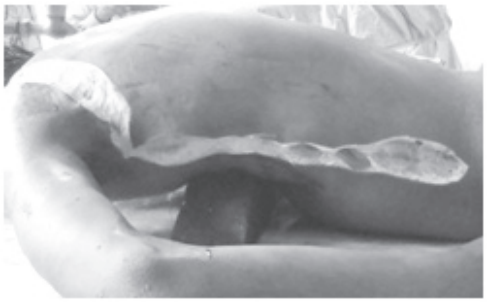


Figure 4


Figure 5


Figure 6

3. Reflection of posterior flap (Figure 5):
Now the posterior part of the scalp flap is reflected back upto the occiput and the anterior portion anteriorly upto the supraorbital ridges. The posterior flap is then reflected back making superficial strokes with the help of scalpel on the subcutaneous tissues and continued through the back of neck, chest and finally the back of abdomen upto the superior border of sacrum. By this way we can reflect the whole flap of skin from scalp upto the superior border of sacrum exposing the whole back of head, neck, chest and abdomen and thus can visualize the whole of back.

B. **To expose the anterior aspect of body**:
After proper inspection of whole of the back, the posterior flap of skin is reflected back.
1. Positioning of body (Figure 6): Now the body is turned back to supine position with a wooden block under the shoulder so that the neck is in extended position.

2. Incision in the front:
a. As in the posterior aspect, a curved incision is made from the acromion process along the medial border of shoulder in the front to the mid axillary line bilaterally (**Figure 7**).
b. Another incision is made from the mid axillary line on iliac crest to symphysis pubis over the inguinal ligament bilaterally (**Figure 8**).

3. Reflexion of anterior flap:
Now the flap of the skin is reflected upward from the symphysis pubis up to the root of neck and then to the inferior margin of mandible bilaterally (**Figure 9**). While


Figure 7


Figure 8


Figure 9


Figure10

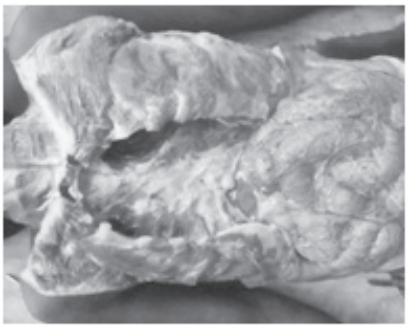


Figure 11


Figure 12

reflecting the anterior flap, care should be taken not to injure the rectus sheath as well as the neck structures. The whole of the anterior aspect of neck, chest and abdomen can be visualized and examined in this way.

C. Opening of abdominal cavity:
To open the abdominal cavity, a paramedian incision is made on rectus sheath with the help of a blunt or pointed scissors or enterotome, near the symphysis pubis, which is extended upward by keeping the index and middle finger as guard upto the xiphoid process (**Figure 10**).

D. Opening of thorax (Figure 11):
By cutting at the costocondral junction and then separating the sternoclavicular joint, the sternum is removed (**Figure11**).

Now, we can examine the whole of the thoracic and abdominal cavities after separating the diaphragm.

E. Closing of the incision:
- Abdomen is closed by stitching the rectus sheath (**Figure 12**).
- The sternum is replaced back to its position (**Figure 12**).
- The flaps of skin are replaced back.
- Stitching should be started from the incision over the inguinal ligament then bilateral mid axillary incision upto the axilla.
- Stitching is then continued along the medial border of shoulder in front on both sides.Body is then turned back and the stitch is continued through the medial border of shoulder on posterior aspect and then the posterior aspect of neck upto the mastoid process. Stitching the scalp incision closes scalp.

DISCUSSION

In conventional method, for detection of any hidden injury especially on the back, (**Figure 14**, **15**) we have to make separate incisions at the places where we suspect injury; thereby causing disfigurement of the body which can be avoided by using the cosmetic Autopsy Incision.
In cases of burn where bruise detection is very difficult or impossible by external examination, we will surely miss the presence of any injury in conventional incisions. But as the whole circumference of the body is exposed in the cosmetic autopsy incision, we can readily opine about the presence or absence of any such injury.

Another advantage of this incision is that, stitches made in the body are not seen except the stitches of medial border of shoulder in the front (**Figure 13**). Taking care


Figure13


Figure 14

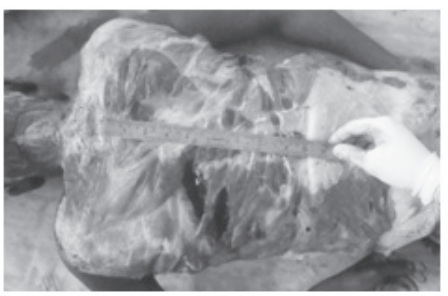


Figure 15

while stitching can minimize this. So, the appearance of the deceased after postmortem examination is not so depressing like the conventional methods with a long stitch in front of the whole body.

Now one of the important advantage of using this incision is that there is no chance of seepage from the abdomen which is closed in two layers, first by stitching the rectus and then the anterior flap. Care is to be taken while opening the peritoneal cavity so that the incision is made on the rectus muscle (paramedian incision) not in midline. In conventional methods, as the abdomen is closed in single layer, there is chance of seepage leading to embarrassment for the relatives of the deceased.

While using the conventional methods to expose the spinal cord in some cases, we have to make a separate incision. But if we use the fourth incision, it can be done while the body is in prone position after reflecting the skin flap.

With these benefits a drawback while using this incision is the "time factor". We nearly have to spend twenty-five minutes of extra time; ten minutes for opening and about fifteen minutes while closing. But this extra twenty-five minutes is not a hurdle if we consider the advantages of the incision.

SUMMARY

The fourth incision is superior than the conventional incisions, because:-

1. Whole circumference of neck, chest and abdomen is visualized and so, very effective particularly in cases of death due to torture, burn or any cases where injuries in the back is suspected.
2. A stitch in front of body is not seen in this method.
3. No or minimal seepage from the cavities.
4. Separate incision for opening the spinal cord is not needed when required.
5. Disadvantage of the incision – 25 minutes more time is required for completion of the whole process.

REFERENCES

1. Karmakar RN. J.B. Mukharjee's forensic medicine and toxicology. 3rd ed. Academic Publishers; 2007. p.198-233.
2. Vij Krishan. Text book of forensic medicine and toxicology. 5th ed. New Delhi: Elsevier; 2011. p. 17-23, 160-8.
3. Camps Francis E, Gradwohl legal medicine. 3rd ed. Bombay K.M. Varghese company; 1976. p. 70-77, 356-60
4. Dr. Laaksonen H, Dr. Parikh CK. Dissection of neck in medico legal postmortems in India. 1st ed. Bombay: Dr. CK Parikh medical publication; 1985. p. 42-43.
5. Dr. Parikh CK. Parikh's text book of medical jurisprudence and toxicology. Bombay Medical centre; 1990. p. 93-104.
6. Dr. Reddy KSN. The essentials of forensic medicine and toxicology. 29th ed. Hyderabad: K. Suguna Devi; 2010. p. 91-111, 284-93.
7. Knight B, Forensic pathology. 3rd ed. London: Arnold; 1996. p. 16-30 312-24.
8. Mathiharan K, Patnaik Kamrit. Modi's medical jurisprudence and toxicology. 23rd ed. Haryana: Lexis Nexis; 2009. p. 357-80, 629-42.
9. Patowary AJ. The fourth incision a cosmetic autopsy technique. The American Journal of Forensic Medicine and Pathology 2010; 31(1):37-41.
10. Patowary AJ. The fourth incision – a few modifications in the autopsy incision technique. The Journal of Indian Academy of Forensic Medicine 2010; 32(3):234-8.
11. Pillay VV. Text book of forensic medicine and toxicology 16th ed, Hyderabad, New Delhi, Paras medical publisher, 2011. p. 139-43, 225-35.
12. Patowary AJ, Mahanta Putul. Autopsy. In: Mahanta Putul, editor. Modern Text Book of Forensic Medicine and Toxicology. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2014. p. 205-210.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

REVIEW PAPER

Mini Nutritional Assessment: An Evidence Based Screening Tool for Identifying Geriatric Malnutrition

Saikia Kaberi*

Received *on March 28/2015;* ***accepted*** *on April 11/2015;* ***approved*** *by author on May 11/2015*

ABSTRACT

Malnutrition in older adults is associated with complications and premature death. The progression to malnutrition is often insidious and undetected. The nurse plays a key role in prevention and early intervention of nutritional problem. The Mini Nutritional Assessment (MNA) or Mini Nutritional Assessment- Short Form (MNA-SF) is a screening tool used to identify older adults (>60 years) who are malnourished or at risk of malnutrition. The MNA or MNA-SF is a noninvasive and inexpensive practical evaluation instrument which provides a simple, quick method of identifying older adults who are at risk of malnutrition. The aim of the systematic review is to summarize the available literature on feasibility of MNA for identifying geriatric malnutrition. Computerized searches were performed on the Pubmed, MEDLINE, Google-searches, Cochrane Library databases and also various journals to locate all the articles from 2004 - 2014 on feasibility of MNA and MNA-SF tool for evaluating nutritional status of geriatric people (>60 years). After eliminating the unwanted items based on inclusion and exclusion criteria selected only six studies, which depict specific information about full MNA score and MNA-SF score. This systematic review implies that the MNA and MNA-SF are the most validated and accepted screening tool for geriatric patients, no matter the setting, with clearly defined thresholds. It is the most efficient, simple and appropriate nutritional assessment tool for older people which can detect malnutrition or at risk of malnutrition before severe weight or albumin loss is present. A physician or a dietician, can complete it easily and nurses in few minutes can not only detect malnutrition but also favor early nutritional intervention in order to improve quality of life.

Keywords*: Malnutrition, Nutritional Screening tool, MNA, MNA-SF.*

BACKGROUND

Malnutrition in older adults is associated with complications and premature death. The progression to malnutrition is often insidious and often undetected. The nurse plays a key role in prevention and early intervention of nutritional problems.

The Mini-Nutritional Assessment Short-Form (MNA-SF) is a screening tool used to identify older adults (> 60 years) who are malnourished or at risk of malnutrition. The MNA-SF is based on the full MNA, the original 18-item questionnaire published in 1994 by Guigoz, et al.[1] The most recent version of the MNA-SF was developed in 2009[2] and consists of 6 questions on food intake, weight loss, mobility, psychological stress or acute disease, presence of dementia or depression,

Address for correspondence and reprint:
*Professor of Public Health Nursing
Regional College of Nursing,Guwahati
Email: Kaberisaikia92@yahoo.in
Mobile: 09435347966

and body mass index (BMI). When height and/or weight cannot be assessed, then an alternate scoring for BMI includes the measurement of calf circumference. Scores of 12-14 are considered normal nutritional status; 8-11 indicates at risk of malnutrition; 0-7 indicates malnutrition. An advantage of the tool is that no laboratory data are needed. An in-depth assessment and physical examination should be performed when patients are identified to be malnourished or at nutritional risk. A 72 hour food diary recording the patent's consumption is another important supplement to the MNA-SF.

The MNA-SF provides a simple, quick method of identifying older adults who are at risk of malnutrition. The MNA-SF should be completed quarterly for institutionalized older adults and yearly for normally nourished community-dwelling older adults.

The full MNA has been validated in many research studies with older adults in hospital, nursing home, ambulatory care, and community settings. Studies have demonstrated internal consistency and inter-observer reliability to range from 0.51 to 0.89.[3] The MNA-SF has a sensitivity of 89%, specificity of 82%, and a strong positive predictive value (Youden Index = 0.70). [2] While the MNA-SF was developed from the full MNA, reliability of the MNA-SF is not yet available.[4]

AIM OF THE STUDY

The aim of this review of literature is to summarize the available literature on feasibility of MNA for identifying geriatric malnutrition.

MATERIAL AND METHODS

A comprehensive search from international Journals, Pub med, Google search, MEDLINE and Cochrane databases were carried out. A systematic review of the published literature 2004- 2014 has been used. The search terms or key words used were Malnutrition, Nutritional Screening tool, MNA (Mini Nutritional Assessment), MNA-SF (Mini Nutritional Assessment-Short Form). The reference lists of articles were checked for further relevant publications. Systematic mixed review approach is used. This approach integrates study findings from studies conducted within the country and outside the country.

STUDY SELECTION

Articles were screened to determine whether the studies found in the search met following inclusion and exclusion criteria.

Inclusion criteria

- Studies related to geriatric nutritional screening tool to identify and management of malnutrition.
- Studies related to Mini Nutritional Assessment – an assessment tool for grading nutritional state of elderly.
- Studies related to Mini Nutritional Assessment-Short Form.
- Studies included that had adequate information pertaining to the objectives.
- Studies which were available in English.
- Literature published from 2004 to 2014.

Exclusion criteria

- Studies with insufficient information

Initial search started with 120 studies. After eliminating the unwanted items based on inclusion and exclusion criteria, only 6 studies were selected which depict specific information about full MNA score and MNA-SF for evaluating nutritional status of geriatric people aged 60 years and above.

STUDY CHARACTERISTICS

Six studies which were conducted in India/abroad included and data were extracted independently by the investigator to obtain details about the sample characteristics, number of samples for the study, detailed information of methodology, tools used and its outcomes. The review was done under the following headings such as authors, title, methodology, results, and source.

DISCUSSION

The systematic review was undertaken to provide necessary information regarding feasibility of use of the MNA tool in routine geriatric assessment and also found that MNA is able to classify the elderly as well nourished and malnourished with reasonable accuracy.

Study Characteristics:

AUTHOR	TITLE	METHODOLOGY	RESULTS	SOURCE
Bawejas, Agarwal H, Mathur A, Haldiya KR (2008)[5]	Assessment of nutritional status and related risk factors in community dwelling elderly in Western Rajasthan	Cross sectional study. 1000 community dwelling elderly population aged 60 years and above (both rural and urban). Nutritional assessment was done by MNA.	7.1% were malnourished, 50.3% were at risk of malnutrition and only 42.6% were well nourished. Rural elderly were more malnourished (11.0%) and at risk of malnutrition (61.6%) than urban elderly (2.1% and 36.4% respectively).	Journal of the Indian Academy of Geriatrics 2008;4(1):5-13.
Vedantam A, Subramaniam V, Rao NV and John KR(2010)[6]	Malnutrition in free living elderly in rural South India: prevalence and risk factors	Cross sectional study. 227 free-living rural elderly aged 60 years and above selected randomly. Nutritional status was assessed by using MNA	14% were malnourished and 49% were at risk of malnourishment. No significant difference was found between men and women. More than 60% of the subjects had low MNA scores (<23.5) indicating deficit in protein energy intake.	Public Health Nutrition 2010;13(9):1328-32
Valeria Maria Caselato Sousa, Maria Elena Guariento, Gilberto Crosta, Mariangela Antunes da Silva Pinto and Valdemiro Carlos Sgarbieri (2011)[7]	Using the Mini Nutritional Assessment to evaluate the profile of elderly patients in a Geriatric Out patient Clinic and in long term institution	Transversal observation study. 90 elderly people of both gender over 60 years of age in 3 different settings. The MNA-SF was used to evaluate the patients for this study.	At the HC Geriatic outpatient clinic the risk of malnutrition was found to be 72.73% while 27.27% of the patients were eutrophic; no malnourished elderly were found.At the ASVP, 15.38% of elderly patients were found to be malnourished, 35.90% were found to be at risk of malnutrition and 48.72% were eutrophic. At the PMI, 42.50% of the elderly patients were found to be malnourished, 2.5% were at risk of malnutrition and 32.50% were eutrophic.	International Journal of clinical medicine 2011; 2:582-587
Kaiser MJ, Baver JM, Uter W, Domini LM, Stange I, et al (2011)[8]	Prospective Validation of the Modified Mini Nutritional Assessment Short Forms in the community, nursing home and rehabilitation setting	Prospective analysis study. Setting was community, nursing home and rehabilitation. 657 elderly aged 65 years and above. Measurement was done by classification agreement between full MNA score and MNA-SF.	The MNA classified 56.3% of participants were well nourished, 29.7% as at risk and 14.0% as malnourished. Agreement between the full MNA and classification using the MNA-SFs was 84.6% when the MNA-SF using body mass index (BMI) was applied and 81.4% when the MNA-SF using calf circumference(cc) was applied. The highest agreement of classification was found in the community setting (90.8% and 90.4%, respectively) and the lowest in the rehabilitation setting (72.4% and 71.4% respectively).	Journal of American Geriatric Society,2011;59(11) :2124-28.

Study Characteristics:

AUTHOR	TITLE	METHODOLOGY	RESULTS	SOURCE
Abdul Ghani, Sarfraz Hussain, Muhhamad Zubair (2013)[9]	Assessment of Nutritional Status of Geriatric Population in Sargodha city	Cross sectional study. Study was conducted in four randomly selected Union Council of Sargodha city. 380 geriatric people aged 60 years and above selected by systematic random sampling. Nutritional status was evaluated by MNA.	5.53% of subjects were malnourished and 42.10% were at risk of malnutrition. Malnutrition was more prominent in males (3.16%) as compared to the females (2.37%) of same age group. The prevalence of malnutrition was significantly higher in upper age group of geriatric (80 years and above)	Int J med Appl health, 2013;1 (1)
Jose Shilpa and Kumari KS (2014)[10]	Validity assessment of MNA among an elderly population in Kerela, South India	Two stage cluster sampling. 500 elderly persons above 60 years. Nutritional status was assessed by using a comprehensive approach including anthropometry, biochemical and clinical assessment, and also MNA tool.	Nutritional status assessment by MNA score revealed that more than half of elderly (53.6%) were well nourished, followed by "at risk" elders (39.6%) and malnourished (6.8%). Using clinical status of subject as "gold standard" the MNA demonstrates a sensitivity of 90.2% and specificity of 96.4% in identifying well nourished and malnourished elderly, which is excellent. Use of BMI as a 'gold standard' also showed that MNA had excellent sensitivity (95.4%) and specificity (93.9%) in identifying malnutrition.	International Journal of Advanced Research, 2014;2 (2):214-221

Baweja S, Agarwal H, Mathur A, and Haldiya KR[5] conducted a cross sectional study to assess nutritional status of 1000 community dwelling elderly population aged 60 years and above (43.8% subjects from urban area and 56.2% subjects from rural areas) in western Rajasthan. Nutritional status assessment was done by using 18 items (30 points) Mini Nutritional Assessment (MNA) scale. The result of the study revealed that 7.1% elderly were malnourished while 50.3% were at risk of malnutrition and only 42.6% were well nourished. Rural elderly were more malnourished (11.0%) and at risk of malnutrition (61.6%) than urban elderly (2.1% and 36.4% respectively).

Vedantam A, Subramanian V, Rao N. V and John KR[6] carried out a cross sectional study to estimate the prevalence of malnutrition among free living elderly (aged 60 years and above) in a rural population of Kaniyambadi block, a rural development block in the state of Tamil nadu. Nutritional status was assessed using the Mini Nutritional Assessment (MNA) questionnaire. The result of the study revealed as evaluated by the MNA 14% of the 227 subjects were malnourished and 49% were at risk of malnourishment. More than 60% of the subjects had low MNA scores (<23.5) indicating deficit in protein-energy intake which is common among the rural elderly of South India and requires more attention.

Valeria Maria Caselato-Sousa, Maria Elena Guariento, Gilberto Crosta, Mariangela Antunes da Silva Pinto, Valdemiro Carlos Sgarbieri[7] conducted a study to verify the nutritional profile of elderly individuals through the application of the MNA in three different locations: at the

Geriatric outpatient clinic and two long-term institutions. Through transversal observation study, the MNA was applied to 90 elderly people of both genders over 60 years of age. The MNA version modified by Rubenstein et al.[14] and translated into Portuguese was used to evaluate the patients for this study. Results of the study revealed that at the AG, the risk of malnutrition was found to be 72.73% ± 3.77%, while 27.27% ± 3.77% of the patients were eutrophic; no malnourished elderly patients were found. At the ASVP, 15.38% ± 11.28% of elderly patients were found to be malnourished, 35.90% ± 15.10% were found to be at risk of malnutrition and 48.72% ± 15.72% were eutrophic. At the PMI, 42.50% ± 15.30% of the elderly patients were found to be malnourished, 25% ± 13.40% were at risk of malnutrition and 32.50% ± 14.50% were eutrophic.

Kaiser MJ, Bauer JM, Uter W, Donini LM, Stange I, Volkert D et al[8] conducted a study to validate the modified Mini Nutritional Assessment (MNA) short-forms (MNA-SFs) with respect to agreement with full MNA classification in the target populations of the MNA. A prospective analysis study was conducted in community, nursing home, rehabilitation setting. Six hundred fifty-seven individuals aged 65 and older (75.3% female; mean age 82.3 ± 7.4) were selected for the study. Measurement was done by classification agreement between full MNA score and MNA-SF scores. The result of the study revealed that agreement between the full MNA and classification using the MNA-SFs was 84.6% when the MNA-SF using body mass index (BMI) was applied and 81.4% when the MNA-SF using calf circumference (CC) was applied. The highest agreement of classification was found in the community setting (90.8% and 90.4%, respectively) and the lowest in the rehabilitation setting (72.4% and 71.4%, respectively). Both MNA-SFs tended to underestimate nutritional status, but that was significant only for the MNA-SF with CC. The study was concluded that the modified MNA-SFs represent a valuable tool for rapid and reliable nutritional screening.

Abdul Ghani, Sarfraz Hussain, Muhammad Zubair[9] conducted a study to assess the nutritional status of geriatric people aged 60 years and above in four Union Councils of Sargodha city. A representative sample of 380 subjects (randomly selected) were studied, out of which 209 were males and 171 were females. Nutritional status was evaluated by anthropometric measurements to calculate the body mass index, mid-arm circumference, calf circumference and by data collected through the Mini Nutritional Assessment (MNA). The MNA results revealed that 5.53% of subjects were malnourished and 42.10% were at risk of malnutrition. Malnutrition was more prominent in males (3.16%) as compared to the females (2.37%) of same age group. The prevalence of malnutrition was significantly higher in upper age group of geriatric (80 years and above) population.

Jose Shilpa and Kumari K.S[10] conducted a study on validity assessment of MNA among an elderly population in Kerela, South India. Two stage cluster sampling was adopted to select 500 elderly persons, 60 years of age who were free from apparent terminal illness or psychological abnormalities. Nutritional status of elderly was assessed by using a comprehensive approach including anthropometry, biochemical and clinical assessment. Also a global tool for assessment of nutritional status of elderly, the Mini Nutritional Assessment (MNA) tool was also used. The result of the study shows that nutritional status assessment by MNA score revealed that more than half of elderly (53.6%) were well nourished followed by "at risk" elders (39.6%) and malnourished (6.8%). Using clinical status of subject as "gold standard", the MNA demonstrates a sensitivity of 90.2% and specificity of 96.4% in identifying well nourished and malnourished elderly, which is excellent. Use of BMI as a 'gold standard' also showed that MNA had excellent sensitivity (95.4%) and specificity (93.9%) in identifying malnutrition.

STRENGTHS AND LIMITATIONS

Unlike many other nutritional instruments, the full MNA and the MNA-SF were developed to be user-friendly, quick, non-invasive, and inexpensive. The MNA-SF takes about 5 minutes to complete and the questions can easily be incorporated into a complete geriatric assessment. The MNA and MNA-SF have been used extensively in clinical research in over 200 international studies.[11] A limiting factor may be the accurate assessment of height and weight to obtain BMI in bedridden individuals. To that end, users of the MNA-SF can substitute calf circumference for BMI. However, clinician lack of familiarity with the requirement of measuring calf circumference is a potential limitation.[12] Question A focuses on food intake (not artificial nutrition), and the appropriateness of the MNA-SF for use in older adults who receive tube-feeding[13] or total parenteral nutrition needs to be considered. Patients

receiving tube-feeding or total parenteral nutrition should be monitored by a dietician or trained nutrition support professional.

CONCLUSION

The MNA provides a number of unique opportunities useful for practice. It is important to sensitize health professional to the problem of malnutrition in older people, especially the frail and ill. Up to date, the MNA is the most validated and accepted screening tool for geriatric patients, no matter the setting, with clearly defined thresholds. It is the most efficient, simple and appropriate nutritional assessment tool for older people. BMI cannot differentiate thin with good nutritional status or obese with malnutrition; albumin plasma level is not useful in the presence of dehydration or an inflammation; previous weight (which is often difficult to determine) is not necessary; the MNA can detect malnutrition or risk of malnutrition before severe weight or albumin loss is present; the MNA allows nutritional intervention and follow-up; it can be completed easily by a physician, a dietician, a nurse or generalist assessor in few minutes and not only detect malnutrition but also favour early nutritional intervention in order to improve nutritional parameters and especially improve quality of life.

REFERENCES

1. Guigoz Y, Vellas B and Garry PJ. Mini nutritional assessment:a practical assessment tool for grading nutritional state of elderly patients. Facts and Research in Gerontology 1994;4(2):15-59.
2. Kaiser MJ, Bauer JM, Ramesch C. Validation of the mini nutritional assessment short-form (MNA-SF): a practical tool for identification of nutritional status. J of Nutritional Health Ageing 2009;13:782-88.
3. Guigoz Y. The mini nutritional assessment (MNA) review of the literature. What does it tell us? Journal of Nutritional Health Ageing 2006;10:466-85.
4. Skates JJ and Anthony PS. Identifying geriatric malnutrition in nursing practice:the mini nutritional assessment (MNA)–an evidence based screening tool. Journal of Geronotological Nursing 2012;38(3):18-27
5. Baweja S, Agarwal H, Mathur A and Haldiya RK. Assessment of nutritional status and related risk factors in community dwelling elderly in Western Rajasthan. Journal of the Indian Academy of Geriatrics 2008;1:5-13.
6. Vedantam A, Subramaniam V, Rao NV and John KR. Malnutrition in free living elderly in rural south India: prevalence and risk factor. Public Health Nutrition 2010;13(9):1328- 32.
7. Valeria Maria Caselato-Sousa, Maria Elena Guariento, Gilberto Crosta, Mariangela Antunes da Silva Pinto, Valdemiro Carlos Sgarbieri. Using the mini nutritional assessment to evaluate the profile of elderly patients in a geriatric out patient clinic and in long-term institution. International Journal of Clinical Medicine 2011;2:582-587.
8. Kaiser MJ, Bauer JM, Uter W, Donini LM, Stange I, Volkert D et al. Prospective validation of the modified mini nutritional assessment short-forms in the community, nursing home, and rehabilitation setting. Journal of American Geriatric Society 2011;59(11):2124-28.
9. Ghani A, Hussain S, Muhammad Z. Assessment of nutritional status of geriatric population in Sargodha city. Int J med Appl health 2013;1(1)
10. Jose S and Kumari KS. Validity assessment of MNA among an elderly population in Kerela, South India. International J of Advanced Research 2014;2(2):214-21.
11. Cereda, E. Mini nutritional assessment. Current Opinion in Clinical Nutrition and Metabolic Care 2012;15(1):29-41.
12. DiMaria-Ghlili RA andGuenter PA. How to try this: the mini nutritional assessment. American J of Nursing 2008;108(2):50-59.
13. Bauer JM, Kaiser MJ, Anthony P, Guigoz Y, andSieber CC. The mini nutritional assessment- its history, today's practice, and future perspectives. Nutrition in Clinical Practice 2008;23(4):388-95.
14. Rubenstein LZ, Harker JO, Salva A, Guigoz Y, Vellas B. Screening for under nutrition in geriatric practice: developing the short-form mini nutritional assessment (MNA-SF). J of Geronotology 2001;56A:366-77.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

A Spectrum of Benign Gall Bladder Diseases and their Laparoscopic Management: An Experience of 100 Patients

Ganguly Narendra N[1]***, Kumar Gautam***[2]

Received *on March 22/2015;* ***accepted*** *on March 27/2015;* ***approved*** *by author on May 11/2015*

ABSTRACT

Improvements in the field of diagnostic studies as well as better understanding of various benign conditions affecting gallbladder may explain the rise in the incidence of it, including gallstones rather than the change in the living standards of Indian population. In the present scenario, this study tries to find out the instance of other benign conditions of gallbladder amongst the patients presenting themselves for laparoscopic cholecystectomy. This study will also look through a detailed review of literature whether in these benign conditions of gallbladder, laparoscopic procedure should be the procedure of choice.

All the patients admitted with symptomatic gallbladder diseases are treated with cholecystectomy. After the advent of laparoscopic surgery, laparoscopic cholecystectomy has become the gold standard procedure for gallbladder removal for benign indications and is the preferred mode of surgery now. Many comparative studies between laparoscopic cholecystectomy and open cholecystectomy in developed countries have been discontinued because patients are refusing the open procedure for the superior procedure, i.e., laparoscopic cholecystectomy primarily due to its completeness and safety, better cosmesis and almost no post-operative pain and discomfort.

This study tried to find out the spectrum of the benign diseases/conditions of gallbladder, which necessitate its removal and also keep in mind about the documented premalignant conditions of the gallbladder, which are benign; and evaluate the prognosis of the patients with such conditions over a period of time to understand whether laparoscopic cholecystectomy should be considered to be the proper form of therapy in all these patients.

Keywords*: Benign, Gallbladder, Cholecystectomy, Laparoscopic*

INTRODUCTION

Benign gallbladder conditions, including gallstones are increasingly becoming common in developing countries, including India.[1]Besides cholelithiasis and cholecystitis, the spectrum of benign gallbladder diseases is quite diverse and includes acalculous conditions such as acalculous cholecystitis, cholesterosis, polyposis of gallbladder and others which differ markedly from calculous cholecystitis and at the same time may or may not be associated with gallstones.

While gallstones, as an entity and its clinical presence, have been known since ancient times, cholesterosis and other acalculous conditions have been recognized recently

Address for correspondence and reprint:
[1]Associate Professor of Surgery (**corresponding author**)
Gauhati Medical College and Hospital
Dr. Narendra N Ganguly MS, PhD
"NAMAN", 12, Jyotiprasad Agarwala Bye Lane
Bishnurabha Path, Beltola, Guwahati,Assam India, Pin: 781028
Mobile: 09435043449
Email: drganguly@yahoo.com
[2]PGT, Dept. of Surgery Gauhati Medical College and Hospital

in the last century. Not many studies are available on these conditions. Facts pertaining to calculous cholecystitis have been studied so many times that biliary surgery has become synonymous with the gallstone disease and is well expressed by this old dictum of A G Kune, 'Know gall stones and all else will come to you in biliary surgery', whereas Moynihan,[2] after describing cholesterosis of gallbladder, raised the same question raised by Virchow, 'does cholesterosis of the gall bladder produce symptoms or is it merely a pathological curiosity?' which is still being debated.

After the first laparoscopic cholecystectomy in 1985, laparoscopic cholecystectomy has also seen changes over the last two decades. From 4 port laparoscopic cholecystectomy to 3 port laparoscopic cholecystectomy, from micro-laparoscopic cholecystectomy to SILC (Single incision laparoscopic cholecystectomy,and from SILC to NOTES (Natural orifice trans-luminal endoscopic surgery) and NOTUS (Natural orifice trans-umbilical surgery), laparoscopic cholecystectomy has itself become a complete entity now. Introduction of robotic transcontinental laparoscopic cholecystectomy has again opened a new area to look into. In this study the procedure done was through classically described 4-port laparoscopy.[3, 4]

The reasons for preference for laparoscopic cholecystectomy over open surgery are obvious and as follows:

i. Laparoscopic cholecystectomy is associated with less chances of wound infection and there is no risk of wound dehiscence; subsequently antibiotic usage is comparatively lesser than that of open cholecystectomy.[5]
ii. The amount of analgesic requirement is less, as there is minimal post-operative pain or discomfort.[6, 7]
iii. Laparoscopic cholecystectomy patients tolerate oral feeds earlier and are mobilized quicker.[8, 9]
iv. The duration of hospital stay is less and patients can be discharged quickly from the hospital and can resume their work early.[8, 9, 10]
v. Laparoscopic cholecystectomy is associated with significant financial saving to the patients.[10, 11]
vi. There is definite cosmetic advantage in laparoscopic cholecystectomy.[5]

After the first laparoscopic cholecystectomy in 1985, laparoscopic cholecystectomy has also seen changes over the last two decades. From 4 port laparoscopic cholecystectomy to 3 port laparoscopic cholecystectomy, from micro-laparoscopic cholecystectomy[12] to SILC (Single incision laparoscopic cholecystectomy,[13] and from SILC to NOTES (Natural orifice trans-luminal endoscopic surgery,[11] and NOTUS (Natural orifice trans-umbilical surgery),[14] the laparoscopic cholecystectomy has itself become a complete entity now. Introduction of robotic transcontinental laparoscopic cholecystectomy has again opened a new area to look into.

MATERIALS AND METHODS

In this study, 100 consecutive patients with a diagnosis of gallbladder disease that underwent laparoscopic cholecystectomy from July 2010 to June 2011 were included. These patients were studied in regard to age, sex, clinical presentation, sonographic findings, operative findings, length of hospital stay, symptomatic relief during follow up, complications and histopathological reporting.

OBSERVATION AND RESULT

AGE DISTRIBUTION

The average age of the patient included in this study was 37.06 years and the range was from 14 years to 70 years. While the average age of a male patient was 42.11 years, the average age in females was 34.45 years (**Table 1)**.

Table 1 Age wise distribution of cases

Age groups	No. of patients			
in years	Male	Female	Total	Percentage
11-20	02	08	10	10%
21-30	04	18	22	22%
31-40	10	27	37	37%
41-50	09	06	15	15%
51-60	05	03	08	08%
61-70	04	04	08	08%
Total	34	66	100	100%

As we can see in the following bar chart, while the highest number of cases was recorded in the 4th decade of life, next highest number of cases was noted in 3rd decade. In the present study, the youngest patient was a girl of 14 years and the oldest was a man of 70 years (case no 61 and 30, respectively). The number of female patients were more in younger age group but the sex ratio was almost reversed or else became equal in 5th, 6th and 7th decade of life.

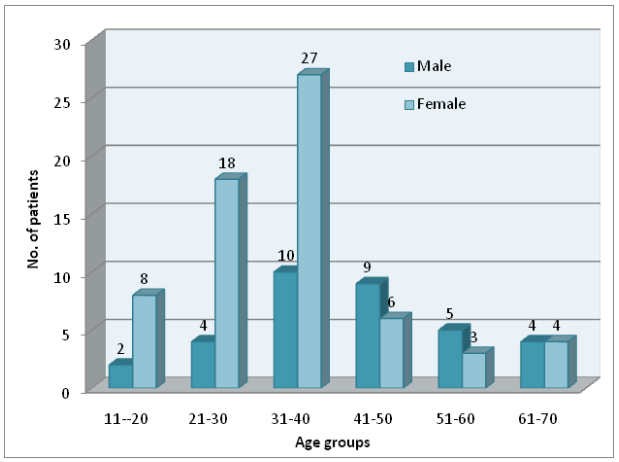


Figure 1 Bar chart depicting age distribution according to sex ratio

SEX DISTRIBUTION

As shown in **Table 2** female patients are more commonly presenting the disease at least till the 4th decade after which the male to female ratio is either reversed or becomes equal. The overall male to female ratio in this study is 1:1.94.

Table 2 Sex wise distribution of cases

Sex	No. of patients	Percentage
Male	34	34%
Female	66	66%

CLINICAL PRESENTATION

Symptomatology of the patients was observed under following headings (**Table 3**):

Abdominal pain: In this study of 100 patients, all of them had history of pain in the abdomen at some or other time before admission as was the inclusion criteria for laparoscopic cholecystectomy.

The pain was dull-aching or colicky in nature. It was mild type in most of the cases but sometimes severe as well. The pain started or was felt in the right hypochondrium of the abdomen, epigastric region, in left hypochondrium or whole abdomen. The radiation of pain was towards the back, right shoulder or right scapular region. Duration of the pain ranged from few months to several years.

Dyspepsia: 62 patients out of 100 (62%) presented complaints of flatulent dyspepsia in their history, being the second commonest symptom. They complained of epigastric discomfort after, a feeling of fullness so that tight clothes were loosened, eructation with temporary relief, and regurgitation sour fluid to the mouth with heartburn.

Nausea and vomiting: In this study 39 patients (39%) gave history of nausea and/or vomiting during the course of disease, mostly during an attack of pain in the abdomen.

Fever: There was history of fever in 11 cases (11%). Fever ranged from 99p -104p F and usually was associated with mild chill and/or rigor.

Abdominal tenderness: Mild abdominal tenderness was elicited in the right upper quadrant (RUQ) in 29 patients (29%) at the time of admission. The following table and chart illustrate the incidence of different clinical presentation of the patients included in this study:

Table 3 Clinical presentations

Symptomatology	No. of patients	Percentage
Abdominal pain	100	100%
Dyspepsia	62	62%
Nausea and/or vomiting	39	39%
Fever	11	11%
RUQ tenderness	29	29%

SONOGRAPHIC FINDINGS

All the 100 cases were subjected to ultrasound study of abdomen prior to admission to the hospital for laparoscopic cholecystectomy. This study revealed gallbladder pathology in all the cases. The detailed results of US examination of the abdomen were(**Table 4)**: cholelithiasis in 94 patients (94%), gallbladder sludge in 4 patients (4%), cholesterosis and adenomyomatosis in 1 patient each. Multiple stones of variable size and shape were found in 61 cases (61%), double stones in 10 cases (10%) and solitary stone was found in 23 cases (23%). Gallbladder was also reported to be contracted in 34 cases (34%) and distended in 12 cases (12%).

Table 4 Sonographic findings

Sonographic findings	No. of patients	Percentage
Multiple calculi	61	61%
Two calculi	10	10%
Single calculus	23	23%
Gallbladder sludge	04	04%
Cholesterosis GB	01	01%
Adenomyomatosis GB	01	01%
Contracted GB	34	34%
Distended GB	12	12%

OPERATIVE FINDINGS

All the 100 cases were treated by laparoscopic cholecystectomy under general anesthesia and received prophylactic dose of a broad spectrum injectable antibiotic, a 3rd generation cephalosporin at the time of induction. Intra-operative findings of these cases differed from each other based mainly on the following points.

Pneumoperitoneum

Creation of pneumoperitoneum was primarily done by open method using Hasson's trocar system while closed method using Veress needle was used in some cases only (5 patients).

MACROSCOPIC EXAMINATION OF GALLBLADDER

On macroscopic examination, gallstones were found in 89 cases (89%); multiple in 70 cases (78.65%) while solitary stones were found in 10 cases (21.35%). Other operative findings are shown in **Table 5**.

Table 5 Macroscopic examination of gallbladder

Macroscopic findings	No. of patients	Percentage
Gallstones	89	89%
Adhesions	64	64%
Shrunken GB	47	47%
Distended GB	32	32%
Strawberry GB	25	25%
Thickened GB	10	10%
Inflamed/Edematous GB	05	05%
GB sludge	03	03%

Drainage

No drain was given during the procedure in this study, except in 3 cases (3%), where it was removed on the 1st post-operative day in all 3 patients after observation of the output.

Length of hospital stay

Out of 100 patients, 91 patients (91%) were discharged on the 1st post-operative day and remaining 9 patients were discharged on the 2nd post-operative day; the average length of post-operative hospital stay was 1.09 days.

Symptomatic relief during follows up

All the patients (100%) reported definite improvement in their symptoms during the follow up with regard to their pre-operative complaints.

Histopathological examination of the gallbladder (Table 6)

Routine histopathological examination of all the excised gallbladder was done and recorded during the follow up in the OPD. Out of 100 patients included in the study histopathological report of 77 patients (77%) showed chronic cholecystitis, though gallstones were present in 89 patients (89%).

Table 6 Histopathological reporting of the gallbladder

HPE	No. of patients	Percentage
Chronic Cholecystitis	77	77%
Cholesterosis GB	06	06%
Cholecystitis Glandularis Proliferans	04	04%
Cholesterol Polyp	03	03%
Adenomyomatosis GB	03	03%
Adenomyomatous Polyp	02	02%
Xanthogranulomatous Cholecystitis	04	04%
Porcelain GB	01	01%

Complications

No complication was observed or reported during post-operative hospital stay or during the follow up. Patients whose histopathological report showed Porcelain gallbladder, Polyposis of gallbladder or Xanthogranulomatous Cholecystitis was followed up to six months till now and no suggestive findings of malignancy or any other complication were noted.

DISCUSSION

The present study comprises of 100 consecutive patients with clinically and radiologically diagnosed benign conditions of gallbladder treated by laparoscopic method, during the period from 1st July 2010 to 30th June 2011.

These cases were studied regarding the wide spectrum of conditions affecting gallbladder and their incidence, clinical presentation, investigations, surgical treatment, complications within the short term follow up and results. Laparoscopic procedure as an effective treatment for all these diseases/conditions was also noted. Pain in the abdomen was the principal presenting symptom associated with or without flatulent dyspepsia, nausea and vomiting, fever and right upper quadrant tenderness.

A meticulous clinical examination, radiological investigations in the form of ultrasonography, intra-operative macroscopic findings of gallbladder pathology and lastly, histopathological examination of the specimen paved the way to understanding of a spectrum of diverse variety of conditions affecting the gallbladder in these patients, which included both calculous and non-calculous origin which may or may not be associated with each other.

Out of 100 patients included in the study histopathological report of 77 patients (77%) showed chronic cholecystitis, though gallstones were present in 89 patients (89%). Other diagnosis reported in histopathological examination included Cholesterosis GB (6%), Cholecystitis Glandularis Proliferans (4%), Cholesterol polyp (3%), Adenomyomatosis GB (3%), Adenomyomatous polyp (2%), Xanthogranulomatos Cholecystitis (4%) and Porcelain GB (1%). The published lierature has revealed 2-28.6% incidence of cholesterosis of the gallbladder in various studies.[15, 16] However, another study had documented a much higher incidence of 62% in their study of 55 patients.[17] Overall incidence of Cholecystoseses, which includes Cholesterosis GB, cholesterol polyp, Cholecystitis Glandularis Proliferans, Adenomyomatosis GB and adenomyomatous polyp, was 18% of total 100 patients. This incidence is in accordance with above-mentioned wide range of incidences for the same.

Concomitant gallstones with Cholecystoses were found in 8 cases (44%). A study has reported 90 patients with cholesterolosis, in the retrospective study of 636 cases. In the same series 53 (58.8%) individuals with cholesterosis were found to have concomitant gallstones, whereas 37 (41.2%) cases had acalculous cholesterolosis. Another study in 2004 also reported 63.4% calculous and 36.6% acalculous cholesterosis with overall incidence of cholesterol in laparoscopic cholecystectomies of 13.4%.[15,17] In a randomized clinical trial of **open cholecystectomy v/ s laparoscopic cholecystectomy for acute cholecystitis** analyzed that there was no significant difference in the rate of postoperative complications, pain score at discharge and sick leave and that the direct medical costs were equivalent while postoperative hospital stay was significantly shorter in the laparoscopic cholecystectomy group.[18, 19]

The average post-operative hospital stay for this study was 1.09 days, which was comparable to previous studies presented by many authors.[20, 21, 22]

There was no complication noted during the postoperative stay in the hospital or during the follow up which is comparable to observations made by many.[23, 24]

All the patients (100%) reported definite improvement in their symptoms during the follow up with regard to their pre-operative complaints, which is comparable to observations made by many authors.[25, 26, 27, 28] Patients diagnosed with Porcelain gallbladder, Xanthogranulomatous cholecystitis and Polyposis of gallbladder were followed till two years and no findings suggestive of malignancy or any other complications were noted.

It has been noticed in this study that there is rise in the incidence of Cholesterosis, Adenomyomatosis and Polyposis of gallbladder in the patients undergoing laparoscopic cholecystectomy.

Laparoscopic cholecystectomy was the treatment modality in this study and there was almost complete symptomatic improvement during the follow up with the patients. No incidences of post operative complications were reported in these cases. Cases diagnosed with premalignant benign conditions like Porcelain gallbladder, Polyposis of gallbladder and Xanthogranulomatous cholecystitis has been followed up to two years and no evidence of malignancy or any complication are noted.

CONCLUSIONS

A clinical study on benign diseases/conditions of gallbladder was carried out in a series of 100 consecutive patients admitted for laparoscopic cholecystectomy with a history of abdominal pain with proven gallbladder pathology on ultrasonography. Benign gallbladder conditions including calculous cholecystitis are a common form of biliary pathology that a surgeon has to encounter frequently in a woman in her middle age, though incidence is increasing in males and extremes of ages. This study although consisted of limited number of cases and a shorter follow up, revealed no drawback. It can safely be suggested that besides gallstone diseases, all other benign diseases also can safely be taken up for laparoscopic surgery for gallbladder removal.

Conflict of interest: None

Ethical clearance: Taken

REFERENCES

1. Kapoor, VK and McMichael, AJ. Gall bladder cancer: An Indian disease National Medical J of India 2003 July/ August;16(4):209-13.
2. Moynihan BG. XVIII. A Disease of the Gall-Bladder requiring Cholecystectomy. Ann Surg 1909 Dec;50(6):1265–1272.
3. Margre't Oddsttir, Hunter JG. Gallbladder and the extra hepatic biliary system: Schwartz's Principles of Surgery, Ninth Edition; The McGraw-Hill Companies, Inc. 2010;1135-67.
4. Pearl, JP and Ponsky, JL; Hybrid surgery. Combined laparoscopy and natural orifice *surgery*. Gastrointest *Endosc Clin N Am 2008* Apr;18(2):325-32.
5. Gadecz, T, Talamini, A. Traditional versus laparoscopic cholecystectomy.Am J surg 1991April;161:336-338.
6. Kum CK, Wong CW, Goh PM, Ti TK. Comparative study of pain level and analgesic requirement after laparoscopic and open cholecystectomy. Surg Laparosc Endosc 1994 Apr;4(2):139-41.
7. Hendolin HI, Paakonen ME, Alhava EM, Tarvainen R, Kempinen T, Lahtinen P. Laparoscopic or open cholecystectomy: a prospective randomized trial to compare postoperative pain, pulmonary function and stress response. Eur J Surg 2000 May;166(5):394-9.
8. Lujan JA, Parrilla P, Robles R, Marin P, Torralba JA, Garcia-Ayllon J. Laparoscopic versus open cholecystectomy in the treatment of acute cholecystitis: a prospective study. Arch Surg 1998 Feb;133(2):173-5.
9. Trondsen E, Riertsen O, Anderson OK, Kjaersgaard P. Laparoscopic and open cholecystectomy: A prospective randomized study. Eur J Surg 1993 Apr;159(4):217-21.
10. Schietroma M, Carlei F, Liakos C, Rossi M, Carloni A, Enang GN et al. Laparoscopic versus open cholecystectomy:An analysis of clinical and financial aspects. Panminerva Med 2001 Dec 43(4):239-42.
11. Bosch F, Wehrman U, Saeger HD, Kirch W. Laparoscopic or open conventional cholecystectomy: clinical and economic considerations. Eur J Surg 2002;168(5):270-7.
12. Mc Cormack, D et al.Micro-laparoscopic cholecystectomy: an alternative to single-port surgery. J gastrointest Surg 2011 Mar;15:758-761.
13. Navarra G, Pozza E, Occhionorelli S, Carcoforo P, Donini I. One-wound laparoscopic cholecystectomy. *Br J Surg* 1997;84:695.
14. Slone, J et al.Laparoscopic Entry: Traditional Methods, New Insights and Novel Approaches.Laparoscopic entry. Springer 2012;195-238.
15. Misra DC et al.Results of surgical therapy for biliary dyskinesia. Arch Surg 1991;126:957-960.
16. Nahum Méndez-Sánchez, et al. Obesity-related leptin receptor polymorphisms and gallstones disease. Annals of Hepatology 2006 April-June;5(2):97-102.
17. Khairy, GA et al. Cholesterolosis Incidence, correlation with serum cholesterol level and the role of laparoscopic cholecystectomy. Saudi Med J 2004;25(9):1226-1228.
18. Harris BC.Retrospective comparison of outcome of 100 consecutive open cholecystectomies and 100 consecutive laparoscopic cholecystectomies. South Med J 1993 Sep;86(9):993-6.
19. Siddiqui T Early versus delayed laparoscopic cholecystectomy for acute cholecystitis: a meta-analysis of randomized clinical trials. Am J Surg 2008 Jan;195(1):40-7.
20. Kelley JE, Burrus RG, Burns RP, Graham LD, Chandler KE. Safety, efficacy, cost and morbidity of laparoscopic versus open cholecystectomy: a prospective analysis of 228 consecutive patients. J Am Surg 1993 Jan;59(1):23-7.
21. Hardy KJ, Miller H, Fletcher DR, Jones RM, Shulkes A, McNeil JJ. An evaluation of laparoscopic versus open cholecystectomy. Med J Aug 1994 Jan17;160(2):58-62.

22. Berggren U, Gordh T, Grama D, Haglund U, Rastad J, Arvidsson D. Laparoscopic versus open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. Br J Surg 1994;81:1362-65.

23. Wolf, AS et al, Surgical outcomes of open cholecystectomy in the laparoscopic era. The American Journal of Surgery 2009;197:781-784.

24. Tzovaras, G et al. Is there a role for drain use in elective laparoscopic cholecystectomy? A controlled randomized trial. The American Journal of Surgery 2009;197:759-763.

25. Grace PA, Quereshi A, Coleman J, Keane R, McEntee G, Broe P et al. Reduced postoperative hospitalization after laparoscopic cholecystectomy. Br J Surg 1991Feb;78:160-62.

26. Hardy KJ, Miller H, Fletcher DR, Jones RM, Shulkes A, McNeil JJ. An evaluation of laparoscopic versus open cholecystectomy. Med J Aug 1994 Jan;160(2):58-62.

27. Hendolin HI, Paakonen ME, Alhava EM, Tarvainen R, Kempinen T, Lahtinen P. Laparoscopic or open cholecystectomy: a prospective randomized trial to compare postoperative pain, pulmonary function and stress response. Eur J Surg 2000 May;166(5):394-9.

28. Johansson M, Thune A, Nelvin L, Stiernstam M, Westman B, Lundell L. Randomized clinical trial of open versus laparoscopic cholecystectomy for acute cholecystitis. Br J Surg 2005;92:44-49.

For best acceptance of your article

SELF-TECHNICAL REVIEW OF ARTICLE

BASIC INSTRUCTIONS

In conducting your self-technical review, please consider the guidelines shown as below. You may complete this form and put your comments in the database as follows in the cover page of your article while submitting:

Type of article: / / Review Paper / / Original Paper / / Case Report / / Critical Review / / Book Review / / Other

Author(s):

Title:

PLEASE ARRANGE YOUR ARTICLE AS FOLLOWS:
(i) Abstract (purpose, methods, results, conclusion), (ii) Introduction, (iii) Material and Methods, (iv) Results, (v) Discussion, (vi) Conclusion, (vii) References (Vancouver style), (viii) Tables and (xi) Figures

You should comment as follows:

- Is the rationale for this work well stated?
- Are the objectives clearly stated?
- Were sound methods used?
- Are assumptions described and their reasonableness supported or rejected?
- Are limitations and uncertainties in the data and analyses given?
- Were alternative hypotheses and interpretations adequately considered?
- Are the results presented in an objective, unbiased fashion?
- Were the objectives of the study met?
- Are the conclusions supported by the data?
- Is the organization of the article logic?
- Is the writing clear, concise and precise?

Signature	**Date:**

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Nutritional Status and its Relationship with Substance use Behavior among Adolescents Slum dwellers of Guwahati

Bardhan Tanusri[1], Saikia Anku Moni[2], Baruah Rupali[3]

***Received** on March 21/2015; **accepted** (revised) on March 30/2015; **approved** by author on May 11/2015*

ABSTRACT

***Purpose**: Substance use poses a serious threat to the nutritional status of growing adolescents. Thus the study was conducted to assess the nutritional status of adolescent substance users living in the slums of Guwahati city and to evaluate the relationship between nutritional status and substance use behaviour. **Methods**: A cross-sectional study was conducted from 1st February till 31st May 2014. Using the prevalence of substance use as 43.4%, absolute precision of 7% and design effect of 2, sample size was calculated as 401. Cluster sampling method was used to select 23 slums. From each slum, 18 adolescents (9 boys and 9 girls) were interviewed to get a total of 414 study subjects. For nutritional assessment, 24-hour dietary recall, Body Mass Index, and haemoglobin estimation was done. Data was analysed using SPSS 16.0. **Results**: Overall prevalence of substance users was 37.7% and current users was 35.0%. Anaemia was found to be significantly associated with substance use status. However, relationship between BMI, calorie deficit and substance use status was not found to be statistically significant. **Conclusion**: Relationship of anaemia with substance use behaviour invites more evidence based research for effective intervention. However, a temporal association could not be established between the two.*

***Keywords**: Nutritional Assessment, Substance User, Anaemia, Slum Dweller*

INTRODUCTION

Substance use has been a menace throughout the world for many centuries. Substance is defined as *'any substance, whether natural or artificial in origin, which when taken into the body in sufficient quantities, exerts a non-negligible effect on a person's perception, cognition, emotion, and/or behavior'*.[1] As per ICD-10, substances include tobacco and its products, alcohol, opioids, cannabinoids, volatile solvents, hallucinogens, sedatives, cocaine, other stimulants and psychoactive substances.[2] Substance use is a life-style and behavioral problem that can lead to social and public health problems, and adolescents seem to be the most vulnerable group to become an easy prey. Adolescence is a critical phase characterized by great physical, physiological, psychological and social changes. During adolescence, individuals typically experiment with a wide range of behaviours and life style patterns. They tend to develop a sense of autonomy, freedom and try to establish a personal identity. The problem of substance use is worst in the slums due to the various environmental factors.

Address for correspondence and reprint:
[1]Post-graduate trainee (**Corresponding Author**)
Email: tanubrdhn@gmail.com
Mobile: 8473803522
[2]Associate Professor, Gauhati Medical College, Guwahati, Assam-781032
[3]Professor and Head of the department of Community Medicine
Gauhati Medical College, Guwahati, Assam-781032

People using substances experience a wide array of physical effects, one of them being the nutritional problems, more specifically the nutritional deficiencies. Many studies on addicts have demonstrated nutritional deficiencies, including weight loss and changes in dietary patterns though the results are variable.[3-10] Factors that could explain the discrepancies among these studies include differences in the types, duration and frequency of substances used. Although nutrition is a multidimensional subject, the influence of abusive substances on the nutritional status during the growth spurt period of adolescence is a matter of concern.

Studies are limited in this regard that evaluates the nutritional status of substance users especially the community based ones. With this background the present study was conducted with the objectives of assessing the nutritional status of adolescent substance users living in the slums of Guwahati city and evaluating the relationship between nutritional status and substance use behaviour.

METHODS

Study Design: Community based cross-sectional study.

Study Area: Slums of Guwahati city, Assam. According to Guwahati Development Department, Government of Assam (2009), there are 90 notified slums in Guwahati city with an approximate total population of 167796, spread over 31 municipal wards encompassing 27966 households approximately.[11]

Study Population: Adolescents (10-19 years), both males and females residing in the slums.

Inclusion Criteria: All adolescents (10-19 years), both males and females residing in the slums for last six months and consenting to the interview.

Exclusion criteria: Critically ill adolescents.

Study Period: 1st February till 31st May 2014.

Sample size and Sampling: Using the prevalence of substance use among adolescents as 43.4%,[12] absolute precision of 7% and confidence interval of 95%, sample size was calculated as 200.5, applying the formula, $n = 4pq/L^2$. Considering a design effect of 2, the sample size came out to be 401. From the total 90 notified urban slums in Guwahati city, 1/4th, i.e., 23 slums were selected by cluster sampling method. For the selection of desired clusters PPS (Population Proportionate to Size) method was applied. From each slum, equal number of boys and girls were taken (18 adolescents, 9 boys and 9 girls) to get a total of 414 study subjects.

Data Collection Tools: Predesigned and pretested schedule, electronic weighing scale, measuring tape, hemochek kit.

Data Collection Technique: House to house visit was made. The first household in each slum was selected at random one all the adolescents fulfilling the inclusion criteria were interviewed from the house and the data were recorded using a predesigned and pretested schedule, and moved on to the next house in search of the subsequent respondents. If the required number of sample units was not met in that slum, then the adjacent slum was taken to get the remaining sample units. Beforehand an adequate rapport was built up with the community/ opinion leaders and family members of the subjects by carefully briefing the purpose of the study. Nutritional assessment was done by 24-hour dietary recall, calculating Body Mass Index and hemoglobin estimation using Hemochek Kit (100 randomly selected respondents, 50 among substance users and 50 among non-users).

Data was analyzed using SPSS 16.0 (SPSS Inc. Chicago). Ethical Clearance was obtained from the Institutional Ethics Committee. Written and informed consent was obtained from the study participants/their guardians.

Operational Definition:

Never User: The respondent, who has not taken any of the substances ever in life, or who used fewer than 10 times in his/her entire lifetime.

Ever User: The respondent, who accepts having taken one or more substances in his/her lifetime for more than 10 times, may continue to take or has given up taking. This is further classified as current user and ex-user.

Current User: The respondent, who has taken substance(s) for more than 10 times in his/her lifetime and is currently using them during the past one month.

Ex-user: The respondent, who has taken substance(s) for more than 10 times in his/her lifetime, but has given up using for at least the last one month.

OBSERVATIONS AND RESULTS

The prevalence of ever users was found to be 37.68% and that of current users was 35.02% and ex-users was 2.68%. While assessing the nutritional status and evaluating the relationship between nutritional status and substance use behaviour, only the current users were considered and the ex-users were excluded. **Table 1** shows the distribution of adolescents according to their Body Mass Index.

Table 1 Distribution of Mass Index

Body Mass Index (kg/m^2)	Boys (%)	Girls (%)	Total (%)
<18.5	78 (39.00)	159 (78.33)	237 (58.81)
18.5 – 24.9	109 (54.50)	40 (19.70)	149 (36.97)
>24.9	13 (6.50)	4 (1.97)	17 (4.22)
Total	200 (100.00)	203 (100.00)	403 (100.00)

The prevalence of under-nutrition among the current users were 62.07% as compared to 56.98% among the never users. However, the relationship between BMI and substance use behavior was not found to be statistically significant (p = 0.4663) as shown in **Table 2**.

Table 2 Relationship between BMI and substance use status

BMI (kg/m$^{2)}$	Current user	Never user	Total
< 18.5	90 (62.07)	147 (56.98)	237 (58.81)
18.5-24.9	48 (33.10)	101(39.15)	149 (36.97)
>24.9	7 (4.83)	10 (3.87)	17 (4.22)
Total	145(100.0)	258(100.0)	403 (100.0)

x^2= 1.526, df = 2, p –value = 0.4663

The mean calorie deficit among the current users was 845.34 (±156.46) kcal/day (**Table 3**).

Out of the 100 randomly selected study subjects, majority (51%) of the adolescents had 10-12 gm/dl of hemoglobin, 28%had less than 10 gm/dl and only 21% had normal hemoglobin status (more than 12 gm/dl). The mean hemoglobin among current users was 10.46 (±1.216) gm/dl in comparison to 11.18 (± 1.612) gm/dl among the never users (**Table 3**) and the association between the hemoglobin status and substance use behavior was found to be statistically significant (p < 0.05).

Table 3 Relationship between mean Hb status and mean calorie deficit with substance user status

Variables	Current user	Never user	t-value	df	p-value
Mean Hb (SD) (gm/dl)	10.46 (±1.216)	11.18 (± 1.612)	2.521	98	0.0133
Mean Calorie deficit (SD) (kcal/day)	845.34 (±156.46)	822.32 (±171.23)	1.335	401	0.1825

DISCUSSION

The overall prevalence of substance users was 37.68% and that of current users was 35.02% and ex-users was 2.68%. Kokiwar PR and Jogdand GS found 32.7%,[13] Sarangi L *et al* found 43.4%,[12] whereas Benegal V *et al* found the prevalence of substance use even higher.[14] This variation could be attributed to inclusion of equal numbers of males and females in the present study.

From **Table 1**, it was seen that majority (54.50%) of the boys had BMI of 18.5-24.9 kg/m^2 whereas 78.33% girls had BMI of <18.5kg/m^2. While eliciting the relationship between BMI and substance use status (table 2), it was found that majority of the current users (62.07%) had BMI of < 18.5 kg/m^2, also most of the never users (56.98%) had BMI of < 18.5 kg/m^2. But this relationship was not statistically significant. Also, no temporal relationship could be established between the two. However, Islam NSK *etal* observed significantly low BMI (p<0.001) among the drug addicts.[3] Karajibani M *etal* studied the BMI of drug users in a treatment centre in Zahedan, Iran and results showed that 40.4% men and 0% women were wasting; 21.3% men and 14.3% women were at risk of wasting; 34.1% men and 57.1% women were of normal weight; and 4.2% men and 28.6% women were overweight.[4] Ross LJ *et al,* also found a significant relationship between BMI and substance use status.[6]

Only 21.0% adolescents had more than 12 gm/dl of hemoglobin. **Table 3** reveals that the mean hemoglobin for the current users and the never users were 10.46 (± 1.216) gm/dl and 11.18 (± 1.612) gm/dl respectively. And this difference between the two groups according to their hemoglobin status was found to be statistically significant (p<0.05). However, no temporal relationship could be established. Islam NSK *et al* conducted a study to assess the nutritional status of drug addicts undergoing detoxification at Central Drug Addiction Treatment

Hospital, Dhaka in 1999, which revealed the drug addicts had significantly ($p<0.001$) lowered hemoglobin.[3] Subramoney S and Gupta PC found that smokeless tobacco use during pregnancy influenced hemoglobin levels in a population-based cohort of 918 pregnant women in Mumbai, India. Mean hemoglobin levels were significantly lower in users (10.00 g/dl) compared with non users (10.46 g/dl), ($p < 0.000$).[15]

Also, the present study reveals no statistically significant difference in mean calorie deficit among current users and never users (**Table 3**). However, various studies found low calorie intake among the drug addicts.[6-7] Such findings in our study could be attributed to the fact that a small sample of the adolescents was included and also the users were using different substances for varying duration and amount. Son SM *et al* found no significant difference of BMI by smoking status even though the smokers showed significantly lower carbohydrate intake and tendency of lower energy intake.[16]

LIMITATION

One of the important limitations of the study is the small sample size. Also, nutritional deficits as reported among the substance users could not be attributed to the substance use behaviour as the temporality could not be established between the two, and also the factors like type of the substance being used, amount, frequency and duration of the substance use could have influenced the results. Similarly, the influence of co-morbidities on the study results could not be excluded.

CONCLUSION

The significant relationship between anaemia with substance use behaviour as found in the present study invites more evidence based research for effective intervention as this is an important point in dealing with the problems of malnutrition among the adolescent age group. Prospective studies with larger sample size in this regard might further help in probing into the issue in its depth.

Acknowledgement: The authors thank the Department of Biotechnology, Ministry of Science and Technology, Government of India, for its financial support for the study.

Conflict of interest: No conflict of interest associated with this work.

Ethical clearance: Taken

REFERENCES

1. Durrant R, Thakker J. Substance use and abuse: cultural and historical perspectives. Thousand Oaks (CA): Sage Publications, Inc.; 2003.
2. WHO. The ICD-10 Classification of Mental and Behavioural Disorders – Clinical descriptions and diagnostic guidelines. 10th ed. Geneva: World Health Organization; 1993. p. 23.
3. Islam NSK, Hossain JK, Ahmed A, Ahsan M. Nutritional status of drug addicts undergoing detoxification: prevalence of malnutrition and influence of illicit drugs and lifestyle. Brit J Nutr 2002;88(5):507-13.
4. Karajibani M, Montazerifar F, Shakiba M. Evaluation of nutritional status in drug users referred to the Center of Drug Dependency Treatment in Zahedan. Int J High Risk Behav Addict 2012 June;1(1):18-21.
5. Mohs ME, Watson RR, Leonard-Green T. Nutritional effects of marijuana, heroin, cocaine, and nicotine. J Am Diet Assoc 1990;90(9):1261-7.
6. Ross LJ, Wilson M, Banks M, Rezannah F, Daglish M. Prevalence of malnutrition and nutritional risk factors in patients undergoing alcohol and drug treatment. Nutrition 2012 Jul;28(7-8):738-43.
7. Santolaria-Fernandez FJ, Gomez-Sirvent JL, Gonzalez-Reimers CE, Batista-Lopez JN, Jorge-Hernandez JA, Rodriguez-Moreno F, et al. Nutritional assessment of drug addicts. Drug Dep. 1995;38(1):11-8.
8. Aylett P. Some aspects of nutritional state in 'hard' drug addicts. Br J Nutr 1978;73:77–81.
9. Altes J, Dolz C, Obrador A, Forteza-Rei. Prevalence of protein-energy malnutrition in heroin addicts hospitalized for detoxication. J Clin Nutr Gastroenerol 1988;3:55–8.
10. Morabia A, Fabre J, Chee E, et al. Diet and opiate addiction: a quantitative assessment of the diet of non-Institutionalized opiate addicts. Br J Addict 1989;84:173–80.
11. Notification. Dispur, Guwahati: Guwahati Development Department, Government of Assam; 2009 Feb. No. GDD.55/ 2006/185.
12. Sarangi L, Acharya HP, Panigrahi OP. Substance abuse among adolescents in urban slums of Sambalpur. Indian J Community Med 2008;33(4):265-67.
13. Kokiwar PR, Jogdand GS. Prevalence of substance use among male adolescents in an urban slum area of Karimnagar district, Andhra Pradesh. Indian J Public Health 2011;55(1):42-5.
14. Benegal V, Seshadri S, Karott M. Drug abuse among street children in Bangalore. A project in calibration between NIMHANS, Bangalore and the Bangalore Forum of street children, Monograph funded by CRY; 1998.
15. Subramoney S, Gupta PC. Anemia in pregnant women who use smokeless tobacco. Nicotine Tob Res 2008;10(5):917-20.
16. Son SM, Park JK, Jeon HS. Nutritional status associated with smoking and other factors in Korean adults women. J Community Nutrition 2004;6(1):3-11.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Study on Changes in Serum Adenosine Deaminase Activity in Patients with Hepatitis

Bora Keshab[1], Das Dipali[2]

***Received** on March 23/2015; **accepted** (revised) on March 30/2015; **approved** by author on May 11/2015*

ABSTRACT

A case control study was undertaken to find out the significance of serum adenosine deaminase activity in hepatitis, to correlate the changes in serum adenosine deaminase activity with respect to other liver function tests and to evaluate its clinical usefulness in diagnosis of hepatitis. Out of total 60 subjects, 30 healthy individuals were taken as control group and 30 cases of different types of hepatitis were taken as test group. The serum Adenosine deaminase and liver function tests were done by colorimetric methods. The mean serum adenosine deaminase activity in control group and the test group were found to be 21.3+3.69 U/L and 73.3+18.33 U/L respectively with a significance of P<0.001. Positive correlation have been found between adenosine deaminase and some parameters of liver function tests such as total bilirubin and serum transaminases in hepatitis which is significant with P<0.05. So, serum adenosine deaminase activity in hepatitis is significantly raised than that in the normal healthy persons and is increased with increasing levels of serum transaminases and total bilirubin levels. The study concluded that determination of serum adenosine deaminase along with liver function test would increase both the sensitivity and the specificity of laboratory tests in the detection of hepatitis.

***Keywords:** Case Control Study, Adenosine Deaminase, Hepatitis, Liver Function Test*

INTRODUCTION

Hepatitis can be described as an inflammatory process in the liver characterized by diffuse or patchy hepatocellular necrosis affecting all acini. Acute hepatitis is when it lasts less then 6 months and chronic hepatitis is when it persists longer. A group of virus, known as hepatitis virus (A, B, C, D and E) cause most cases of liver damage worldwide. Hepatitis can also be due to toxins (notably alcohol) or from autoimmune process, hepatitis due to metabolic diseases (Wilson's disease), ischemic hepatitis, non-alcoholic steatohepatitis, hereditary ($á_1$-antitrypsin deficiency, hereditary hemochromatosis), etc. Epidemics of liver disease were recorded, as long ago as Hippocrates' time and, despite major advances in diagnosis and prevention methods over the past two decades, viral hepatitis remains one of the most serious global health problems facing humans today.

Liver tests rarely suggest a specific diagnosis; rather, they suggest a general category of liver disease, such as hepatocellular or cholestatic, which then further directs the evaluation. The liver carries out thousands of

Address for correspondence and reprint:
[1]Demonstrator (Corresponding Author)
Assam Medical College and Hospital
Dibrugarh: 786002, Assam
Mobile: 09577125046
Email: drkeshab82@gmail.com
[2]Professor and Head
Department of Biochemistry
Fakaruddin Ali Ahmed Medical College and Hospital
Mobile: 09435193501
Email: drdipalidas123@gmail.com

biochemical functions, most of which cannot be easily measured by blood tests. Laboratory tests measure only a limited number of these functions. In fact, many tests, such as the aminotransferases or alkaline phosphatase, do not measure liver function at all. Rather, they detect liver cell damage or interference with bile flow. Thus, no test enables the clinician to accurately assess the liver's total functional capacity. To increase both the sensitivity and the specificity of laboratory tests in the detection of liver disease, it is best to use them as a battery. Due to the above shortcomings, there is a continuous search for a test along with the existing liver function tests, which also gives a picture of the pathogenesis of the liver disease. Testing for serum adenosine deaminase level in hepatitis gives us an idea about the mononuclear cell infiltration and lymphocytic proliferation that occurs in hepatitis along with hepatocyte damage.

Adenosine deaminase is an enzyme involved in the catabolism of purine bases, capable of catalyzing the deamination of adenosine, forming inosine in the process.[1] Its main physiologic activity is related to lymphocytic proliferation and cell mediated immune response.[2,3] It was reported that high serum adenosine deaminase activities were observed in patients with acute hepatitis, alcoholic hepatic fibrosis, chronic active hepatitis, liver cirrhosis and hepatoma.[4] The elevated serum adenosine deaminase activity in patients with hepatitis may reflect the phagocytic activity of macrophages and proliferation of lymphocytes, and may provide useful additional diagnostic information on the pathogenesis of hepatitis. In view of the above, the present study is undertaken to evaluate the value of adenosine deaminase activity in various types of hepatitis and correlate the values with other liver function tests.

MATERIALS AND METHODS

The present study was designed as a case control, hospital based study in a tertiary care medical college and hospital. Two groups of subjects selected for the study are as follows:

1. Control group: In the control group, only those subjects were selected who gave no history suggestive of hepatitis or any major illness in the recent past and in whom clinical examination did not reveal any abnormality relating to any system. There were 22 male and 8 female subjects with age ranging from 10 years to 60 years. Among the subjects selected, healthy individuals, age and gender matched for the patients, were included as controls. All individuals of the control group co-operated voluntarily.

2. Experimental or Test group: In these groups' 30 cases of different types of hepatitis including viral, toxic, alcoholic and autoimmune hepatitis was taken with prior informed consent. There are 23 males and 7 females in the experimental group. The cases were selected on the basis of the following criteria:

(a) History and findings suggestive of hepatitis namely fever, malaise, anorexia, nausea, vomiting, pain in the right upper abdomen, high colored urine, jaundice, tender hepatomegaly, etc.

(b) Biochemical evidence of damaged liver function with serum total bilirubin level more than 1.2 mg/dl.

(c) It was also ensured that the patients did not have other diseases such as diabetes mellitus, cardiovascular diseases, hypertension, kidney disease, etc.

The following investigations were done in each of the cases:

1) Serum adenosine deaminase estimated by MICROXPRESS ADA- MTB kit dependent on Giusti method.[5]

2) **Liver function profile**:
   i) Total serum bilirubin estimated by Modified Jendrassik and Grof's method.[6]
   ii) Total protein measured by Biuret method.[7, 8]
   iii) Albumin estimated by Bromocresol green method.[9]
   iv) Serum alanine aminotransferase (ALT or SGPT) estimated by Modified International Federation of Clinical Chemistry (IFCC) method.[10]
   v) Serum aspartate aminotransferase (AST or SGOT) determined by IFCC method.[10, 11]

RESULTS AND OBSERVATION

Age and sex distribution of subjects: In the control group, the age of the subjects ranged from 10 to 60 years, with a mean of 34.6 years and a standard deviation of 11.69. The majority of them belonged to third decade constituting 33.3% of the total. Out of a total of 30 controls 22 were male (73.4%) and 8 were female (26.6%). The age

of the patients ranged from 10 years to 60 years, with a mean of 34.7 years and a standard deviation of 10.9. The peak incidence of the disease was observed in the age group of 20 to 29 years (36.7%) followed by 30 to 39 years (26.7%) and 40 to 49 years (23.3%). Out of a total of 30 cases 23 were male (76.7%) and 7 were female (23.3%).

Table 1 Age and sex wise distribution of subjects

Variables		Group			
		Control		Test	
		Number of cases	Percentage	Number of cases	Percentage
Age in years	10–19	2	6.7	1	3.3
	20–29	10	33.3	11	36.7
	30–39	8	26.7	8	26.7
	40–49	6	20	7	23.3
	50–60	4	13.3	3	10
Sex	Male	22	73.4	23	76.7
	Female	8	26.6	7	23.3

Etiology of hepatitis: Maximum of the hepatitis cases are of viral origin with a percentage of 63.3%. Majority of the viral hepatitis cases have hepatitis A with a percentage of 47.4 %.

Serum adenosine deaminase activity in hepatitis: **Figure 1** shows that majority of the patients with hepatitis were having ADA more than 80 U/L. Very few cases were having ADA below 60 U/L. Moderate number of cases were having ADA in between 60 to 80 U/L.

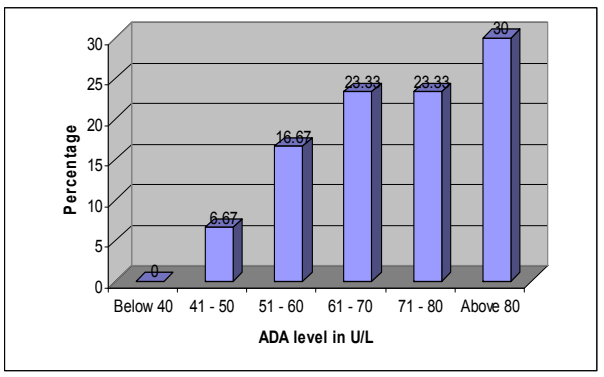


Figure 1 Percentage distribution of ADA in hepatitis

Table 2 Results of estimated serum adenosine deaminase under different conditions in control and experimental groups with their mean values and statistical parameters

Control group (A)				Experimental group			
Serial No.	ADA (U/L)	Serial No	ADA (U/L)	Serial No	ADA (U/L)	Serial No	ADA (U/L)
1	22	16	23	1	46	16	85
2	15	17	25	2	56	17	72
3	21	18	24	3	121	18	64
4	25	19	25	4	61	19	101
5	22	20	22	5	57	20	92
6	17	21	16	6	42	21	60
7	22	22	28	7	88	22	76
8	18	23	24	8	81	23	110
9	20	24	27	9	55	24	63
10	21	25	25	10	66	25	76
11	17	26	26	11	74	26	64
12	19	27	23	12	52	27	98
13	21	28	13	13	82	28	77
14	17	29	19	14	71	29	61
15	22	30	20	15	69	30	77
STATISTICAL PARAMETERS							
N	30			30			
SUM	639			2198			
MEAN	21.3			73.3			
SD	3.69			18.33			
SEM	0.67			3.35			
CV	17.13			25.03			
Range	13 – 28			42 – 121			
Min	13			42			
Max	28			121			
't' between	Degree of freedom		't'	'p'			
A and B	58		-15.23	<0.001			

Table 2 shows that the serum ADA values in the test group have been significantly increased with a mean +SD of 73.3+18.33 U/L in comparison to the control group with mean +SD of 21.3+3.69 U/L. The't' value is -15.23 and the 'P' value is <0.001.

Liver function test in hepatitis:
The mean serum total bilirubin level is more in test group (9.1 mg/dl) than that in control group (0.77 mg/dl). Mean serum AST level is more in the test group (544.6 U/L) than that in the control group (29.9 U/L). Mean serum ALT level is more in the test group (751.2 U/L) than that in the control group (33.6 U/L). Mean serum total protein level is decreased in the test group (6.42 g/dl) than that in the control group (7.29 g/dl). Mean serum albumin

level in the test group (3.42 g/dl) is decreased than that in the control group (4.44 g/dl).

CORRELATION STUDIES

a) Correlation between total bilirubin and ADA in hepatitis:

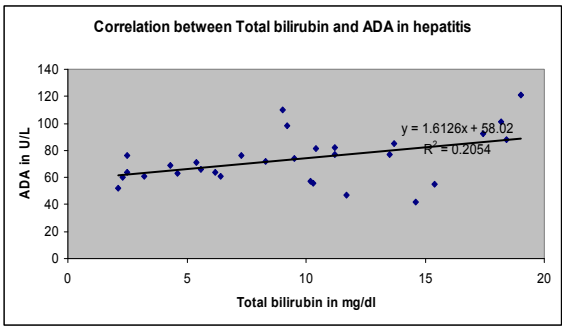


Figure 2 shows that there is positive correlation between ADA and total bilirubin in hepatitis with correlation coefficient r = 0.4533 which is significant with P=0.0119 i.e <0.05

b) Correlation between AST and ADA in hepatitis:

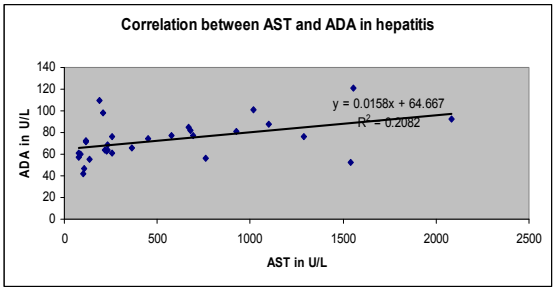


Figure 3 shows that there is positive correlation between ADA and AST in hepatitis with correlation coefficient r=0.4563 which is significant with P=0.0113 i.e <0.05

c) Correlation between ALT and ADA in hepatitis:

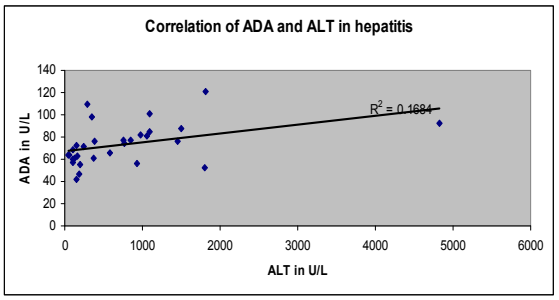


Figure 4 shows that there is positive correlation between ADA and ALT in hepatitis with correlation coefficient r=0.4104 which is significant with P=0.0243, i.e. <0.05

Negative correlation have been found between ADA and albumin in hepatitis with correlation coefficient r= - 0.2539 and P>0.1, i.e., not significant. Similarly, there is no correlation between ADA and total protein in hepatitis with correlation coefficient r = 0.09198 and P>0.1, i.e., not significant.

DISCUSSION

This study shows that, serum adenosine deaminase activity in hepatitis patients have a significantly higher value compared to the control subjects (p<0.001). The control group comprising of 30 individuals have a mean serum adenosine deaminase activity of 21.3+3.69. The test group consisting the same number of cases has a mean serum adenosine deaminase activity of 73.3+18.33 with a significance of P<0.001 against 58 degrees of freedom. So, the high values found in hepatitis against control group are statistically highly significant. This means that hepatitis patients have higher values of serum ADA against normal healthy individual. Kalkan A et al, 1999[12] in the study 'Adenosine Deaminase and Guanosine Deaminase Activities in Sera of Patients with Viral Hepatitis' stated that increase in serum ADA activities in hepatitis forms may be dependent on and reflect the increase in phagocytic activity of macrophages and maturation of T-lymphocytes, and may be valuable in monitoring in viral hepatitis cases. According to Kobayashi F et al, 1993[4] ADA activities are raised also in alcoholic hepatitis. Although in toxic and alcoholic hepatitis, there is no macrophage activity or lymphocyte proliferation, the raised serum ADA activity may be due to ADA1 isoenzyme which is because of the hepatocyte damage as described by Kurata N et al[13]. The result obtained matches with the results found by various authors like Takahashi M et al 1984[14], Wang J L et al 1986[15], Kaya S et al 2007[16], Vasudha K C et al 2006[17], Pratibha K et al 2004[18], etc.

Very highly significant differences in the liver function tests between the normal control and the test group with hepatitis shows that the levels of the liver function tests are significantly affected by the hepatocyte status under hepatitis and establishes the reliability for their comparative analysis with the secondary variable adenosine deaminase. In the present study, positive correlation was detected between the levels of ADA and those of ALT, AST and total bilirubin in hepatitis cases.

CONCLUSION

From this small study, it can be concluded that serum ADA activity in hepatitis is significantly raised than that in the normal healthy persons. The serum ADA activity is increased with increasing levels of serum transaminases and total bilirubin levels.

To increase both the sensitivity and the specificity of laboratory tests in the detection of liver disease, it is best to use them as a battery. Testing for serum adenosine deaminase level in hepatitis gives us an idea about the mononuclear cell infiltration and lymphocytic proliferation that occurs in hepatitis along with hepatocyte damage. Inclusion of this test to identify the inflammatory reactions occurring in hepatitis will help in monitoring the clinical status of the hepatitis patient and hence the prognosis.

Acknowledgement: I am indebted to Dr. Putul Mahanta Sir for his valuable advice in miscellaneous aspects.

Ethical clearance: Taken

Source of funding: Nil

Conflict of interest: Nil

REFERENCES

1. Fox IH, Kelley WN. The role of adenosine and 22 - deoxyadenosine in mammalian cells. Annu Rev Biochem 1978;47:655-686.
2. Galanti B, Giusti G. Metodo colorimetrico diretto per la determinazione delle attivita adenosina deaminasie 5- AMP deaminasi del siero. Boll. Soc Ital biol Sper 1966;42:1316.
3. Piras MA, Gakis C, Budroni M, Adreoni G. Immunological studies in Mediterranean Spotted fever. Lancet 1982;1(8283):1249.
4. Kobayashi F, Ikeda T, Marumo F, Sato C. Adenosine deaminase isoenzymes in liver disease. Am J Gastroenterol 1993;88:266-271.
5. Giusti G, Galanti B. Adenosine deaminase. In: Bergmeyer HU,ed. Methods of Enzymatic Analysis. New York, Academic Press. 1974;1092–1099.
6. Jendrassik L, Grof P. Colorimetric Method of Determination of bilirubin. Biochem Z. 1938;297:81-82.
7. Gornall AG, Bardawill CJ, David MM. Determination of serum proteins by means of the biuret reaction. J Biol Chem 1949 Feb;177(2):751-66.
8. Doumas BT. Standards for total serum protein assays–a collaborative study. Clin Chem 1975;21:1159–1166.
9. Doumas BT, Watson WA, Biggs HG. Albumin standards and the measurement of serum albumin with bromocresol green. Clin Chim Acta 1971 Jan;31(1):87-96.
10. Bergmeyer HU, Bowers GN Jr, horder M, Moss DW. Provisional recommendations on IFCC methods for the measurement of catalytic concentrations of enzymes. Part 2. IFCC method for aspartate aminotransferase. Clin Chim Acta 1976 Jul 15;70(2):19-29.
11. Young DS. Principles and technique 409 New York, Harper and Row 728 (1974). Clin Chem 1975;21(5):304.
12. Kalkan A, Bulut V, Erel O, Avci S, Bingol NK. Adenosine deaminase and guanosine deaminase activities in sera of patients with viral hepatitis. Mem Inst Oswaldo Cruz. 1999 May-Jun;94(3):383-6.
13. Kurata N, M Nihara, K Matsubayashi, K Kase, M Haneda. Activities and isozymes of adenosine deaminase and lactate dehydrogenase in tuberculous effusion with special reference to Mycobacterium Tuberculosis. L. Rinsho. Byori 1992;40:670-672.
14. Takahashi M, Arai, Ohashi T, Wakayama Y, Satsuta K, Yunoki H. Studies on the serum adenosine deaminase activity test in patients with hepatitis. Nippon Ika Diagaku Zasshi 1984;51(6):768-771.
15. Wang JL, Yuan SY, Shao JF. Determination of serum adenosine deaminase : its diagnostic value in jaundice and liver fibrosis. Zhonghua Nei Ke Za Zhi 1986 Feb;25(2):79-81,126.
16. Kaya S, Cetin ES, Aridogan BC, Arikan S, Demirci M. Adenosine deaminase activity in serum of patients with hepatitis - a useful tool in monitoring clinical status. J Microbiol Immunol Infect 2007;40(4):288-92.
17. Vasudha KC, Nirmal Kumar A, Venkatesh T. Studies on the age dependent changes in serum adenosine deaminase activity and its changes in hepatitis. Indian J Clin Biochem 2006;21(1):116-120.
18. Pratibha K, Anand U, Agarwal R. Serum adenosine deaminase, 52 nucleotidase and malondialdehyde in acute infective hepatitis. Indian J Clin Biochem 2004;19(2):128-131.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Knowledge and Practice of Staff Nurses on Palliative Care

Begum Sorifa[1], Khanam Mosphea[2]

***Received** on March 21/2015; **accepted** (revised) on April 03/2015; **approved** by author on May 11/2015*

ABSTRACT

To provide quality care at the end of life or for chronically ill patients, nurses must have good knowledge, attitude and practice about palliative care. Palliative care concept is new in Assam and very little is known about the type of services offered and the readiness of nurses to provide palliative care. A descriptive study was conducted to assess the knowledge and practice of staff nurses on palliative care in selected hospitals of Guwahati city, Assam. A self-administered structured questionnaire was used to collect data from 100 staff nurses. The study revealed that maximum 79% have inadequate knowledge, 21% have moderately adequate knowledge and no one has adequate knowledge on palliative care. According to the levels of practice maximum 48% practice adequately where as 43% practice moderately adequate and only 9% practice inadequately. The correlation (r= 0.30) indicates that there is a positive correlation between knowledge and practice scores of palliative care by the staff nurses. Further analysis revealed that there is positive correlation between knowledge and practice with all the age group, professional qualification, The result also reveals that the nurses working in North-East Cancer Hospital and Research Institute and Dr. B. Barooah cancer hospital practices more according to their knowledge because of their exposure to patients who needs palliative care than the nurses working in Gauhati Medical College Hospital. It was also observed that there is negative correlation between knowledge and practice of nurses with lowest and highest years of experience selected for this study.

***Keywords**: Curative, Quality of life, descriptive survey approach, convenient sampling technique, psychosocial, spiritual, communication, dying, bereavement*

INTRODUCTION

Palliative care began in hospice movement. The first hospital based palliative care programme began in United States in the late 1980's.[1, 2] In most countries, palliative care is provided by an interdisciplinary team consisting of physicians, registered nurses, nursing assistants, social workers, hospice chaplains, physiotherapists, occupational therapists, complementary therapists, volunteers and most importantly family members.[1]

According to World Health Organization palliative care is an approach that improves the quality of life of patients and their families facing the problems associated with life threatening illness, through prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems physical, psychosocial and spiritual.[2, 3]

Palliative care is the active total care of patient in advanced and incurable stages of cancer. More than 70% of all

Address for correspondence and reprints:
[1]Lecturer (**Corresponding Author**)
Mobile: 9577513101
Email: sorifa7332@gmail.com
[2]Principal cum Professor
B. Sc. Nursing College Dibrugarh, Assam, India
Mobile: 9435011750
Email: mospheakhanam@gmail.com

cancer patients in India require palliative care for relief of pain, other symptoms and psychosocial distress. The need for education and training in palliative care has been emphasized by the World Health Organization.[4, 5]

The nurse is a key member of health team who typically has the greatest contact with the patient. This prolonged contact gives the nurse a unique opportunity to know the patient and the caregivers, to assess in depth what is happening and what is of importance to the patient, and to assist the patient to cope with the effects of advancing disease. The nurse's expertise in providing physical and emotional care to the patient, symptom management, patient and family education, and in organizing the patient's environment to minimize loss of control, is critical to palliative care.[6, 7, 8]

Studies revealed that critical care nurses not only lack knowledge about palliative care in general and management of signs and symptoms in particular, but also lack knowledge about providing support to and communicating with patients and patients' families and the spiritual needs of patients and their families.[9, 10, 11]

The value of palliative care to nurses who deliver majority of care to critically ill patients is unquestionable, and there is a need to support and educate nurses for the provision of high quality palliative and end-of-life care. The significance of a knowledge deficit of palliative care has been seen throughout various studies. Hence, the first step in developing a strategy to support and educate nurses about palliative care is to assess their current knowledge, attitudes and practice as there is limited research on palliative care with the nurses.

Keeping in view all these above mentioned facts and as no such study was conducted on assessing knowledge and practice of staff nurses on palliative care in North-East India, the present study was undertaken. The findings of the study will also create awareness among the educator, practitioner, administrator and researcher in this particular field.

OBJECTIVES

1. To assess the knowledge and practice of staff nurses on palliative care.
2. To find out the correlation between knowledge and practice of palliative care by the staff nurses.
3. To find out the correlation between knowledge and practice of staff nurses on palliative care with their selected demographic variables (Age, professional qualification, work area, and years of experiences).

MATERIALS AND METHODS

The descriptive survey approach was adopted for the study. This study was confined to the nurses working in Gauhati Medical College and Hospital, Dr. Bhubaneshwar Barooah Cancer Institute and North East Cancer Hospital and Research Centre. The population consisted of staff nurses working in theses three hospitals.

The size of the sample was 100 and convenient sampling technique was used for this study to select the sample.

Data collection instrument and technique

The self administered structured questionnaire was used which consists of demographic characteristics, questionnaire on knowledge and practice of palliative care. Knowledge score has been divided into three categories. They are inadequate knowledge upto 50%, moderately adequate knowledge score from 51% to 75% and adequate knowledge score above 75%. Practice score has been divided into three categories. They are inadequate practice; score up to 50%, moderately adequate practice; score from 51% to 75% and inadequate practice score above 75%.

RESULTS

All the items of the tool were coded and transferred into master sheet for analysis. Frequency and percentage distribution was used to describe the demographic characteristics. To find out the correlation between knowledge and practice, Karl Pearson's correlation coefficient (r) was used.

Demographic characteristics

The data revealed that 62% were of 21-30 years, 26% were of 31-40 years and the only 12% were of 41 years and above age.

In regards to professional qualification 94% have the General Nursing and Midwifery (GNM), 3% are having Basic B.Sc. nursing degree and only 3% have Post Basic B.Sc. nursing degree.

In relation to work area of staff nurses 65% were from Gauhati Medical College Hospital, 31% from Dr. Bhubaneshwar Barooah Cancer Institute and only 4% were from North- East Cancer Hospital and Research Institute.

In case of experience, maximum 46% have 0-5 years followed by 6-10 years (21%) , 11-15 years (14%), 16-20 years (6%), 21-25 (7%) and only 6% have 26-30 years of job experiences.

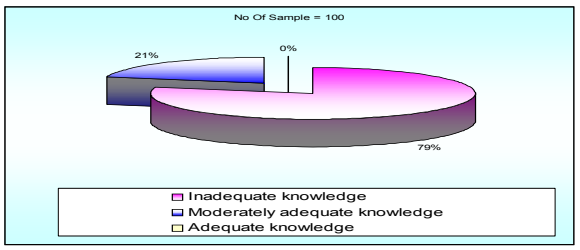


Figure 1 Distribution of nurses according to their level of knowledge on palliative care

Figure 1 Depicted that maximum 79% nurses have inadequate knowledge, 21% have moderately adequate knowledge and no one has adequate knowledge on palliative care.

Table 1 Distribution of nurses according to practice of palliative care

Level of practice	Number of nurses	Percentage (%) distribution
Inadequate practice	9	9 %
Moderately adequate practice	43	43 %
Adequate practice	48	48 %

Table 1 Shows that majority 48% of the nurses' practice adequately followed by 43% moderately adequate practice and only 9% practice inadequately

Table 2 Correlation between knowledge and practice of palliative care by the staff nurses

Variable	Mean Score	SD score	r value
Knowledge	11.17	4.46	0.30
Practice	62.92	12.81	

Table Percentage (%) 2 shows that correlation coefficient r= 0.30 between knowledge and practice. This indicates that there is a positive correlation between knowledge and practice but the correlation is moderate.

Table 3 Mean, standard deviation (SD) and knowledge percentage according to different items of palliative care

Items on knowledge	Mean Knowledge	SD Score	Knowledge in %
Definition, philosophy and principles of Palliative Care	2.66	1.41	53.2
Communication	0.71	0.62	35.5
Psychological and Spiritual aspects	1.10	0.70	55
Pain Management on Palliative Care	1.22	0.70	40.6
Symptom Management of Palliative Care	3.99	1.85	33.3
Dying and bereavement	1.49	1.23	37.3

Table 3 depicted that on an average knowledge 55% score of nurses is highest on psychological and spiritual aspect. Nearly 53.2% knew the definition, philosophy and principle of palliative care. Of the total 40.6% have knowledge on pain management, followed by dying and bereavement 37.3%, 35.5% on communication and least on symptom management 33.3%

Table 4 Mean, standard deviation (SD) and practice percentage of nurses according to different aspects of palliative care

Items on practice	Mean Practice score	SD Score	Practice %
Psychological and Spiritual aspects	11.31	3.35	70.68
Communication	15.01	3.35	75.05
Symptom Management including pain management	31.15	6.53	70.79
Dying and bereavement	5.45	1.71	68.12

Table 4 Shows that nurses practice highest on communication (75.05%), followed by symptom management (70.79%), psychological and spiritual aspect (70.68%) and least on dying and bereavement (68.12%).

Table 5 Correlation between knowledge and practice of nurses according to their age

Age (in years)	Number of nurses	Mean knowledge score±SD	Mean practice score±SD	Correlation Coefficient (r)
21-30	62	10.02±3.88	61.90±13.38	0.13
31-40	26	13.08±4.80	64.85±12.28	0.60
41 and above	12	13.00±4.86	64.50±10.63	0.40

Table 5 Shows correlation between knowledge and practice on palliative care by the nurses of all the age groups are positive. It is found to be moderately positive among the nurses between the age groups 21-30 years and 41years and above (r=0.13 and r=0.40 respectively). The correlation is highly positive (r=0.60) among the nurses of age group 31-40 years. This indicates that the nurses of 31-40 years of age are practicing more according to their knowledge.

Further analysis was done to find out correlation between knowledge and practice of nurses according to their *professional qualification* and it is observed that there is a highly positive correlation (r=0.99) between the knowledge and practice among the GNM nurses and negative correlation (r= -0.97 and r= -0.19) between the knowledge and practice scores among the Basic B.Sc. and Post basic B.Sc. nurses respectively. Therefore it may be interpreted that there is highly positive correlation between knowledge and practice of staff nurses with less professional qualification, their practice increases as the knowledge increases.

Again correlation between knowledge and practice of nurses according to their *area of work* it was revealed that there is moderately positive correlation (r= 0.46) between knowledge and practice of nurses according to their area of work, i. e., North East Cancer Hospital and Research Institute (r= 0.5), Dr. B. Barooah Cancer institute and Gauhati Medical College Hospital (r= 0.18). The findings indicate that the oncology nurses working in North-East Cancer Hospital and Research Institute and Dr. B. Barooah Cancer Hospital have more exposure to palliative practice than the nurses working in Gauhati Medical College and Hospital. Staff nurses working in oncology hospital acquire knowledge from their work experience and with increase in knowledge they are applying it to practice.

It was also observed that there is positive correlation (r=0.20) between knowledge and practice of nurses according to their experience. It is revealed that the nurses having 16-20 years of job experience have moderately positive correlation (r=0.54) than the nurses having 6-10 years of experience. A strong positive correlation (r=0.61) was observed among nurses having 11-15 years of experience and a highly positive correlation (r=0.72) among the nurses having 21-25 years of working experience.

DISCUSSION

The study intended to find out the knowledge and practice of staff nurses on palliative care in selected hospitals of Guwahati city, Assam and their correlation with age, professional qualification, work area and years of experiences.

The result of this study showed that the majority of nurses (79%) had inadequate knowledge about palliative care. The possible reason for this might be that these nurses have not been trained on palliative care. On the other hand practice of palliative care was observed adequate practice (48%), moderately adequate practice (43%) and inadequate practice (9%). This result is consistent with other studies done by Ronaldson S, and et al (2008)[12], Proctor M and et al [13] and Williams NP.[14] Selected sample of this study do not have adequate knowledge on different aspects of palliative care. They have moderately adequate knowledge only on two aspects (psychological and spiritual aspects and definition, philosophy and principles). While in other aspects they are exhibiting inadequate knowledge. However unlike knowledge score, nurses exhibit better score on practice. One interesting finding has been drawn out that though the knowledge score on 'communication' is inadequate, but at the same time the practice score on 'communication' is moderately adequate among the nurses.

There is also a high positive correlation between knowledge and practice of staff nurses with less professional qualification; their knowledge increases with the increase in practice. And it is seen that with high professional qualification of staff nurses, their knowledge and practice does not correlate which is in accordance with the study observation by Hiwot and et al Kassa.[15] The findings also show that there is negative correlation between knowledge and practice of nurses with lowest and highest years of experience. Nurses with least experiences are novice and lack confidence although they have basic knowledge, so knowledge and practice does not correlate. Analysis shows that there is significant mean difference between mean knowledge and mean practice score ($P<0.05$). This finding is contradicted with the study done by Huda Abu Saad, Hani D and Sarah A.[16]

CONCLUSION

Knowledge on palliative care is essential for nurses who encounter patients with terminal illness like cancer. As cancer is the leading cause of death, nurses will have challenges in many ways, if their preparation for this situation is not adequate. The researcher inquired about the knowledge and practice in order to determine how much nurses really know and practice palliative care. Nurses, in this study, are found to have less knowledge than the practice on palliative care. Knowledge on palliative care becomes the responsibility of those nurses who work with terminally ill patient. Therefore there is a need to support and educate these nurses for the provision of high quality palliative and end-of-life care. Education in nursing programs and nursing textbooks, as well as continued education on palliative care, will aid in the

development of a plan, which will help in improving their knowledge, and also practice.

Acknowledgement: The authors wish to thank nurses who participated in the study for taking their valuable time and sharing their knowledge, views, and opinions in the study. Sincere thanks to Prof. (Mrs.) Mosphea Khanam, Professor of Medical-Surgical Nursing, Regional College of Nursing, Guwahati, Assam presently working as Principal, B.Sc Nursing College, Dibrugarh who constantly guided in the study.

Contribution of Authors: I declare that this work was done by the author named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

Ethical Consideration: Ethical clearance was obtained from the Institutional Ethical Committee of Gauhati Medical College and Hospital, Guwahati. Approvals were also obtained from participating hospitals. Verbal and written consent was taken from each participant, and participants' anonymity and confidentiality was kept. Anonymity of the respondents was maintained by using a coded number instead of their names.

REFERENCES

1. Joseph N, Jayarama S, Kotian S. A comparative study to assess the awareness of palliative care between urban and rural areas of Ernakulum district, Kerala, India. Indian J Palliat Care 2009;15:122-6. [cited 2010 Mar 6]; Available from: URL:http://www.jpalliativecare.com/text.asp?2009/15/2/122/58457
2. Twycross Robert. Introducing Palliative Care. Calicut; A Publication of Institute of Palliative Medicine. 4th ed. p. 2-7.
3. Narayanasamy A, Owens J. A critical incident study of nurses' responses to the spiritual needs of their patients. J Adv Nurs 2001;33(4):446–55. Available from: URL: www.jpalliativecare.com/article.asp?issn.
4. National Cancer Control Programme; Policies and Management Guidelines; Geneva, World Health Organization. 1995. Available from: URL:http://www.ncd.bvsalud.org/.../038-national_cancer_control_programmes_-_who.pdf
5. Palliative care, Current Affairs. August 2010; Available from: URL:http://indiacurrentaffairs.org/category/health/page/6.
6. White KR, Coyne PJ, Patel UB. Are nurses adequately prepared for end-of-life care? J Nurs Scholarsh 2001; 33(2):147–51. Available from: URL:www.medscape.org/viewarticle/574420.
7. Nordgren L, Olsson H. Palliative cares in a coronary care unit: a qualitative study of physicians' and nurses' perceptions. J Clin Nurs 2004;13:185–93. Available from: URL:www.cfp.ca/external-ref?access_num=14708928&link_type=MED
8. Norton SA, Talerico KA. Facilitating end-of-life decision-making: strategies for communicating and assessing. J Gerontol Nurs 2000;26(9):6–13. Available from: URL:ajh.sagepub.com/content/25/5/389.refs.
9. Board of Health Sciences Policy Institute of Medicine (IOM). 2002. Available from: URL:http://www.iom.edu
10. Ferrell, B., Virani, R., and Grant, M. Analysis of end-of-life content in nursing textbooks. Oncology Nursing Forum. 1999;26(5):1-10. Available from: URL:http://www.ncbi.nlm.nih.gov/pubmed/10382185
11. Pritchard, M., Davies B. End of life in pediatric oncology: How clinical practice leads to research. J of Pediatric Oncology Nursing 2002 November/December;19(6):191-7. Available from: URL:http:www.top25.sciencedirect.com/.../nursing.../journal/journal-of-pediatric-oncology-nursing
12. Ronaldson Susan, Hayes Lillian, Carey Michele, Aggar Christina. A study of nurses' knowledge of a palliative approach in residential aged care facilities; International J of Older People Nursing;3(4):258-67. Available from; URL: http://www.wileyinterscience/journal/article.pdf
13. Proctor M, Grealish L, Coates M, Sears P.; Nurses' knowledge of palliative care in the Australian Capital Territory. Int J Palliat Nurs 2000 Oct;6(9):421-8. Available from: URL:http://www.ncbi.nlm.nih.gov/pubmed/12388893
14. Williams NP. (2004) Staff Nurses' Knowledge of Pediatric end-of-life care: a descriptive study. Available from: URL:http://etd.lib.fsu.edu/theses/available/etd-11152004-200155)
15. Hiwot and et al Kassa**,** Rajalakshmi Murugan**,** Fissiha Zewdu**,** Mignote Hailu and Desalegn Woldeyohannes**;** Assessment of knowledge, attitude and practice and associated factors towards palliative care among nurses working in selected hospitals, Addis Ababa, Ethiopia. BMC Palliative Care 2014;13:6 doi:10.1186/1472-684X-13-6.
16. Huda Abu- Saad, Hani Dimassia and Sarah Abbouda Perspectives on palliative care in Lebanon: Knowledge, attitudes, and practices of medical and nursing specialties. Palliative and Supportive Care. 2009;7:339-47. Available from: URL:http://journals.cambridge.org/action/display Abstract? from Page=online and aid=6238500

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Third Coronary Artery – An Autopsy Study

Yadukul S[1], Sumangala CN[2], Chandragirish C[3], Chandrashekar TN[4]

***Received** on March 28/2015; **accepted** (revised) on April 11/2015; **approved** by author on May 11/2015*

ABSTRACT

Anatomy and functionality of the coronary circulation have been of interest to physicians ever since it emerged that mammalian hearts have their own blood supply. If asked how many coronary arteries the normal heart has, most of the medical students (and many practitioners) would answer "TWO". However, the frequent presence of two right coronary artery roots is not generally well appreciated, even though it has been evident to anatomists and cardiac surgeons for centuries.

In this present study, we dissected 550 hearts for a period of 6 months from January 1st 2011 to 30th June 2011 in Victoria Hospital, Department of Forensic Medicine, Bangalore Medical College and Research Institute, Bengaluru. The incidence, position, course of the third coronary and other forensic importance of the third coronary artery will be discussed in the present study.

***Keywords**: Coronary Circulation, Third Coronary Artery, Autopsy.*

Address for correspondences and reprint:
[1]Assistant Professor (**Corresponding Author**), Department of Forensic Medicine and Toxicology, Chamarajanagar Institute of Medical Sciences, Chamarajanagar.
Mobile: +91 9986510681
Email: dr.koooool@gmail.com
[2]Assistant Professor, Department of Forensic Medicine and Toxicology, Bangalore Medical College and Research Institute, Bengaluru. [3]Assistant Professor, Department of Anatomy, Chamarajanagar Institute of Medical Sciences, Chamarajanagar. [4]Dean and Director, Chamarajanagar Institute of Medical Sciences, Chamarajanagar.

INTRODUCTION

The human heart is in most cases vascularized by two coronary arteries, the right and the left coronary artery. Supernumerary or added coronary arteries are also present sometimes. Supernumerary coronary artery, which arises independently from the right aortic sinus (sinus Valsvae) and passes through sub-epicardial adipose tissue of pulmonary conus and anterior side of the right ventricle, is called third coronary artery. The third coronary artery (TCA) is a direct branch from the right aortic sinus (RAS) without any observable common trunk with the right coronary artery (RCA). It supplies the infundibulum (conu) of the Right Ventricle (RV), which is usually vascularized by the conal branches of both the RCA and the left anterior descending (LAD).[1, 2] The reported prevalence of the TCA suggests ethnic variability.[1-4]Although its distribution is relatively unexplored, this artery may supply variable parts of the anterior wall of the RV and the Inter-ventricular septum.[5-7]This study was undertaken with the purpose of estimating the incidence, position, and course of the third coronary and other forensic importance of the third coronary artery.

MATERIAL AND METHODS

This study was conducted at Victoria Hospital, Department of Forensic Medicine and Toxicology, Bangalore Medical College and Research Institute, Bengaluru for a period of 6 months from January 1st 2011 to 30th June 2011. A total number of 1779 cases were performed during the study period, out of which 550 cases were selected for our study. Specimens with observable cardiac defects and decomposed cases were excluded from the study. The hearts were dissected to display the origins of the right, left and third coronary arteries. The aortic root was split

posteriorly to enable a clear view of the RAS with its orifices. With the aid of dissecting lenses, the branches of the TCA were displayed and traced distally to confirm the course, branching and termination.

OBSERVATION AND RESULTS

In this present study, we dissected 550 hearts (out of 1779 cases) for a period of 6 months from 1st January 2011 to 30th June 2011 in Victoria hospital, Department of Forensic Medicine, Bangalore Medical College and Research Institute, Bengaluru. The varieties of cases that have been selected for this study are shown in **Figure 1**.

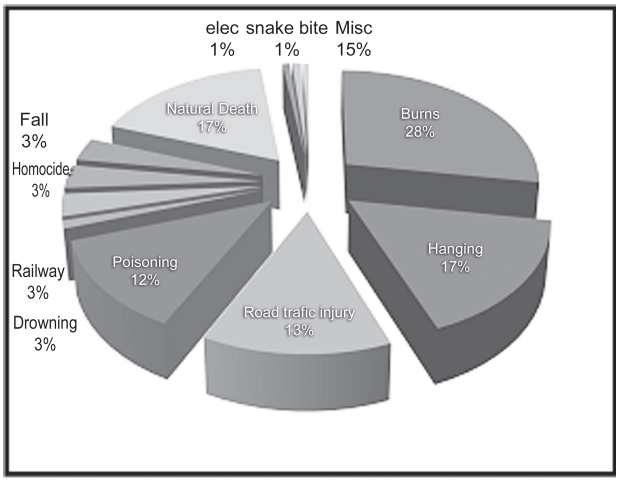


Figure 1 Variety of cases included

Figure 2 Presence of third coronary artery

Amongst 550 cases, 53% (n=293) were males. Out of the 550 hearts dissected, third coronary artery/conal artery was present in 184 hearts, which amounts to 33.45% (Fig 2). Incidence in males was 109 out of 293 (37.2%) and in females, it was 75 out of 257 (29.18%). According to the position (**Figure 3**) of the third coronary artery, 83.15% was in 10'clock position (n=153), 13.04% was in 9'clock position (n=24), 2.71% was in 8'clock position (n=5), 1.08% was in 7'clock position (n=2). Majority of the third coronary artery, i.e., 145 (78.8%) had an independent course without obvious anastomosis. Rest of the cases, 39 (21.2%) had a short course and had anastomosis with right coronary artery. Multiple orifices have been seen in 3 individuals (**Figure 4**). It was observed that among the 95 natural death cases, 32 cases were due to sudden natural death of cardiac origin. In these 32 cases, third coronary was present only in 3 cases.

Figure 3 Third coronary in 10' clock position

Figure 4 Presence of Multiple orifices

DISCUSSION

Many authors have studied the blood vessels, their variations and abnormalities. Various studies have been done in the past regarding the prevalence of third coronary artery, but very few have been done in our country. Supernumerary coronary artery arises mostly from the right aortic sinus. According to Almira et al., out of 25 hearts, examined by dissection, 8 of them (32%) had conal artery and 1 heart (4%) had four coronary arteries.[8] In a Kenyan study by Olabu et al., it is observed that out of 148 cadaveric hearts, third coronary artery was seen in 35.1%.[9] Study by Gouda Hareesh et al., discussed the importance of geographical differences and in establishment of partial identity if ante-mortem record is maintained.[10] Studies from other countries regarding the incidence of the third coronary artery are mentioned in **Table 1**.[3, 4, 7, 11-13] In our study, the incidence is 33.45%, which is higher (~9%) than the values given by Kalpana.[13] It is remarkable that although the incidence of third coronary artery in our study is close to most of the other studies, much lower values have also been reported. These findings suggest ethnic variability and appear to support the proposal by Garg et al[14] that there are geographical differences in coronary artery variations, which may have a genetic basis. Two orifices within the RAS had also been reported in the same setting.[15] The separate orifices for the TCA and the RCA had been explained by insufficient unification of these two vessels, during their growth towards the ascending aorta.[16, 17] Had•iselimoviæ[18] points out that even three coronary arteries may arise independently from the right aortic sinus what was confirmed by this study too. Literature uses different terms for identifying this artery: conal artery, preinfundiblar or supernumerary right coronary artery.[18-20] Literature describes cases with anastomosis of the coronary artery with the front interventricular branch, diagonal, circumflex one, as well as with the branches of the right coronary artery.[21-24]

Table 1 Incidence of third coronary artery

Author	Population	Incidence
Miyazaki et al[3]	Japanese	36.8%
Ivan et al[4]	Bulgarians	34.8%
Von Ludinghausen et al[7]	Germans	7.1%
Kurjia et al[11]	Iraqui	8%
Kalpana[12]	Indians	24%
Turner et al[13]	English	15.8%

CONCLUSION

The most suitable term to identify supernumerary heart artery that arises independently from the right aortic sinus is the third coronary artery. The present study highlights that the incidence of third coronary artery is 33.45%. It was observed that among the 95 natural death cases, 32 cases were due to sudden natural death of cardiac origin. In these 32 cases, third coronary artery was present only in 3 cases. Further studies, which include presence of third coronary artery among cardiac and non-cardiac individuals, should be done to access the importance of third coronary artery. Since this study is autopsy based, more research on third coronary artery is the need of the hour even in living individuals.

Acknowledgements: We sincerely acknowledge Dr. Devadass. PK, Dean and Director of Bangalore Medical College and Research Institute and all the Faculty members of Department of Forensic Medicine and Toxicology, Bangalore Medical College and Research Institute, Bengaluru. We also thank Dr. Prabhavathi, Professor of Cardiology, Shri Jayadeva Institute of Cardiovascular Sciences, and Bengaluru for her insight regarding the knowledge of third coronary artery.

Conflict of interest: None.

Contribution of Authors: We declare that the authors named in this article did this work and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. Dr. Yadukul. S is the principle researcher who designed, collected and analyzed the data. Dr. Sumangala played a key role in collecting the data and analyzing it. Dr. Chandragirish and Dr. Chandrashekar. TN, were very helpful in providing the anatomical and clinical aspects to further analyze the data collected.

Ethical clearance: Taken.

REFERENCE

1. Schlesinger MJ, Olla PM, Essler W. The conus artery: Third coronary artery. Am Heart J 1949; 38:823-36.

2. Williams PL, Warwick R, Dyson M, Bannister H. Gray's Anatomy. 38th ed. London: Churchill Livingston; 1995. p. 1451-626.

3. Miyazaki M, Kato M. Third coronary artery: Its

development and function. Acta Cardiol 1988; 43(4):449-57.

4. Ivan S, Milica J. Morphometric characteristics of the conal coronary artery. M J M 2004;8:2-6.

5. Sahni D, Jit I. Blood supply of the human interventricular septum in Northwest Indians. Indian Heart J 1990;45(5):334.

6. Ben-Gal T, Sclarovsky S, Herz I, Strasberg B, Zlotikamien B, Sulkes J. Importance of the conal branch of the right coronary artery in patients with acute myocardial infarction; electrocardiographic and angiographic correlation. J Am Coll Cardiology 1997;29(3):506-11.

7. Von Ludinghausen M, Ohmachi N. Right superior septal artery with "normal" right coronary and ectopic "early" aortic origin: a contribution to the vascular supply of the interventricular septum of the human heart. Clin Anat 2001;14(5):312-9.

8. Almira L, Fehim O, Ademir T. Third coronary artery; Bosnian J of basic Med Sci 2008;8(3):226-9.

9. Olabu BO, Saidi HS, Hassanali J, Ogeng'o, JA. Prevalence and distribution of the third coronary artery in kenyans. Int J Morphol 2007;25(4):851-4.

10. Gouda HS, Mestri SC, Aramani SC. Third coronary artery- boon or bane; J of Ind Acad of For Med 2009;31(1):62-4.

11. Kurjia HZ, Cheudhry MS, Olson TR. Coronary artery variation in native Iraqui Population. Cathet Cardiovasc Design 1986;12(60):386-90.

12. Kalpana RA. Study on principal branches of coronary artery in humans. J Anat Soc India 2003;52(2):137-40.

13. Turner K, Navaratnam V. The positions of coronary arterial ostia. Clin Anat 1996;9(6):376-80.

14. Garg N, Tewari S, Kapoor A, Gupta DK, Sinha N. Primary congenital anomalies of the coronary arteries: A coronary Arteriographic study. Int J Cardiol 2000;74(1):39-46.

15. Saidi HS, Olumbe OK, Kalebi A. Anatomy and pathology of coronary artery in adult black kenyan. East Afr Med J 2002;79(6):323-7.

16. Reese DE, Mikawa T, Bader DM. Development of the coronary vessel system. Circ Res 2002;91(9):761-8.

17. Wada AM, Willet SG, Bader D. Coronary vessel development: a unique form of vasculogenesis. Arterioscler Thromb Vasc Biol 2003;23(12):2138-45.

18. Had•iselimoviæ H., Dilberoviæ F., Ovèina F. Blood vessels of the human heart: coronarography and dissection. Acta Anat (Basel) 1980;106(4):443-9.

19. Tanigawa J., Petrou M., Di Mario C. Selective injection of the conus branch should always be attempted if no collateral fi lling visualizes a chronically occluded left anterior descending coronary artery. Int J Cardiol 2007;115(1):126-7.

20. Gupta SK, Abraham AK, Reddy NK, Moorthy SJ. Supernumerary right coronary artery. J Clin Cardiol 1987;10(7):425-27.

21. Sharma S, Kaul U, Rajani M. Collateral circulation to the diagonal artery from the infundibular coronary artery in obstructive coronary arterial disease. Int J Cardiol 1989;25(1):134-6.

22. Kerensky RA, Franco EA, Hill JA. Antegrade filling of an occluded right coronary artery via collaterals from a separate conus artery, a previously undescribed collateral pathway. J Invasive Cardiol 1995;7(7):218-20.

23. Levin DC, Beckmann CF, Garnic JD, Carey P, Bettmann MA. Frequency and clinical significance of failure to visualize the conus artery during coronary arteriography. Circulation 1981;63(4):833-7.

24. Mishkel GJ, Biagioni E, Stolberg H. Total occlusion of the circumflex artery with collateral supply from the conus artery. Cathet Cardiovasc Diagn 1991;23(3):194-97.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Public Attitudes toward Organ Donation, Autopsy and Anatomic Dissection- A Prospective Study

Mahanta Putul[1], Rajbangshi Madhab Chandra[2]

***Received** on March 28/2015; **accepted** (revised) on April 11/2015; **approved** by author on May 11/2015*

ABSTRACT

This study was aimed to know the people's reactions to techniques involving the dead body by comparing their feelings toward organ donation, autopsy and anatomic dissection. 92% reported acceptance of an autopsy for themselves and 85% for a close relative. 60% were willing to donate their own organs and 40% to donate the organs of a family member, 15% accepted donation of their whole body for dissection. Nearly all who accepted dissection willing to donate their organs and to be autopsied; almost all who were willing to donate their organs also accepted autopsy. About 70% felt some discomfort at the thought of autopsy and organ donation. Woman seemed more sensitive towards operation on the dead body than men.This study was conducted on the beliefs, attitudes of people towards organ donation, anatomic dissection and autopsy in the region of Assam.

***Keywords**: Public attitudes, organ donation, autopsy, anatomic dissection*

Address for correspondence and reprint:
[1]Associate Professor (**Corresponding Author**)
Depertment of Forensic Medicine and Toxicology
Tezpur Medical College, Tezpur, Assam
Email: drpmahanta@gmail.com
Mobile: 9435017802
[2]Assistant Professor, Depertment of Surgery
Gauhati Medical College, Guwahati, Assam
Email: mcrajbangshi@gmail.com
Mobile: 9864270673

INTRODUCTION

The number of transplant done annually makes India, one of Asia's leading countries in the field.[1] As per statistics about cadaver transplant 1300 transplantation has been done in India upto 2009, since the legislation was passed in 1994. An NGO 'MOHAN' has been responsible for facilitating over 33% of such cadaveric donations in TN and AP, mainly in Chennai.

The donations itself have been sporadic and confined to a few states and the numbers have not been able to cater to the demand for organs.[2] Several health care areas are dependent on people's willingness to dispose off their body or parts thereof after death, and the issue of procedures involving corpses entails important and, to some extent, growing problems: the autopsy rate has declined considerably during the last decades all over the Western World.[3-5] There is an evident discrepancy between the need for transplantable organs and the supply[6, 7], and there are also difficulties in providing corpses for anatomy education. The reasons behind these problems are probably manifold; some would be connected with the attitudes of people in general.

At that time of Tertullian and Augustine, there were strong religious and social objections to the autopsy. Although in the early years of Christianity, there was no formal church prohibition, the general attitude of church leaders was still unfavorable.[8] Jarcho has called attention to the problems of performing autopsies in Germany in 1670. In a medical periodical of that year, there is an autopsy report with a comment, "the other structures could not be examined because a female relative changed her mind.

Our people have a great horror of autopsies and very rarely allow them unless special persuasion has been used." The editor of the journal added a discussion of the difficulties of obtaining permission and some possible answers to the objections of relatives.[9] This ruling was apparently maintained by orthodox Jews until the twentieth century when Knesset, the Israeli parliament, passed a law permitting autopsies under strictly limited conditions.[10]

India's total population is 1.22 billions. The number of daily deaths is 62389, daily births is 86853 and total blind people are 682497 respectively. If daily dead people donate their eyes, within 11 days all blinds will be able to see. Then in India there will be NO blinds! However, death is a highly sensitive issue, and people's opinions on what might be done with the cadaver are very much influenced by their thinking about death.

OBJECTIVE OF THE STUDY

This study was conducted to estimate people's reactions to dealings involving the dead body by comparing their attitudes toward autopsy, organ donation and anatomic dissection of people of Assam.

MATERIAL AND METHOD

This investigation was carried out, using a questionnaire with 25 objects that speak reactions towards autopsy, organ donation and anatomic donation of the body after death, including religious and socio-demographic issues. An age stratified, random sample of 500 people of Assam of 18 to 75 years old was taken for this study.

OBSERVATION AND RESULT

Response Rate of Participants: The response rate of age-stratified, random sample of 500 Indians living in Assam was 90%, however 10% people reacted their negative response as shown in **Figure 1**.

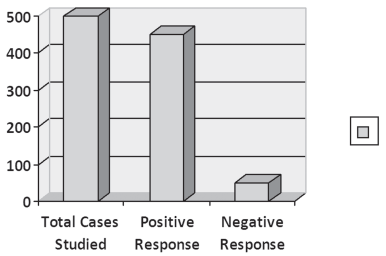


Figure 1 Response Rate of Participants

Attitudes Towards Autopsy: A total of 92% reported acceptance of an autopsy for themselves in a case of unnatural death and 85% for their close relative. However, 8% of total cases flatly rejected autopsy with their own body and 15% for their relative as well as stated in **Table 1**.

Table 1 Response rate of participant in percentage (%)

Response of Participants Towards	Autopsy				Towards Organ Donation				Anatomic Dissection			
	Own		Relative		Own		Relative		Own		Relative	
	M	F	M	F	M	F	M	F	M	F	M	F
Positive	60	32	62	23	40	20	30	10	10	5	10	2
Negative	6	2	10	5	30	10	45	15	40	45	28	60
Total	**66**	**34**	**72**	**28**	**70**	**30**	**75**	**25**	**50**	**50**	**38**	**62**

Attitudes Toward Organ Donation: A total of 60% were willing to donate their own organs to save the life of others while 40% reject the same procedures. In this study 40% cases agreed to donate the organs of their family members and 60% stated that they would not encourage their family members to donate their organ for any reason.

Attitudes Towards Anatomic Dissection: Only 15% cases accepted donation of their whole body for anatomic dissection in medical education to help medical researcher for future knowledge gathering, while 85% refused the procedure. Out of 15% cases 12% want to assist their relative for the same procedures.

Nearly all who accepted dissection also willing to donate their organs and to be autopsied; almost all who were willing to donate their organs also accepted autopsy. About 70% felt some discomfort at the thought of autopsy and organ donation. Woman seemed more sensitive toward operations on the dead body than men.

Religious and Illiterates Sentiment: A total of 75% of religious and illiterates section felt some discomfort at the thought of own autopsy and organ donation. However, 25% of total case agreed the procedure and thought that this act will be helpful for the society.

RANK ORDER OF MEDICAL PROCEDURES

The rank order of medical procedures during life and after death, based on the proportion of individuals positive towards the procedures can be used to form a scale with autopsy and dissection at each end point and organ donation in the middle.

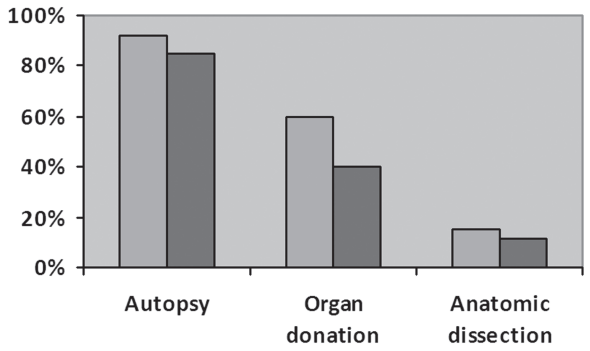


Figure 2 Rank order of Medical Procedures

DISCUSSION

The rate of non response 8%, can be attributed not only to factors affecting all mail surveys, but also to the sensitive nature of the issue. The relatively high non response rate on certain questions is another indication of the sensitivity. This finding was well tallied with the study of Margareta Sanner.[11]

A large majority of the respondents indicated that they would accept an autopsy for themselves. 92% reported acceptance of an autopsy for themselves in a case of unnatural death and 85% for their close relative. However, 8% of total cases flatly rejected autopsy with their own body and 15% for their relative as well. Some Forensic Medicine and Toxicology experts argue that more autopsies are performed than necessary. However, recent studies show that autopsies can detect a person's condition that were not suspected when the person was alive, and the growing awareness of the influence of genetic factors in disease has also emphasised its importance. It is important to note that autopsies can also provide peace of mind for the bereaved family in certain cases. Therefore, an autopsy should be encouraged regardless of caste, community and religion upon all unnatural deaths. The key lies in a renewed understanding of Forensic pathologists, clinicians and hospital administrators about the role of autopsy in health care. The autopsy room should not be seen as the place where sorrow and the spectre of death come alive; rather it should be where death rejoices to aid the living.[12] This high response towards autopsy is because of details and explanations about the procedures. In this study women were more sensitive toward the procedures on the dead body than men that tallied with the findings of Sanner M.[11]

Response to organ donations after death were considerably less positive, especially when the donation of organs from a relative was concerned. 60% were willing to donate their own organs to save the life of others while 40% reject the same procedures. In this study 40% cases agreed to donate the organs of their family members and 60% stated that they would not encourage their family members to donate their organ for any reason. In two questions, different types of possible reactions of discomfort at the thought of autopsy and organ donation, experience of discomfort as mentioned which were well tallied with the findings of Sanner M, Den Doda Kroppen.[11, 13]

Dissection is the most extensive procedure of those mentioned herein. Only 15% cases accepted donation of their whole body for anatomic dissection in medical education to help medical researcher for future knowledge gathering, while 85% refused the procedure. Out of 15% cases 12% wants to assist their relative for the same procedures. The findings were tallied with the findings of Sanner M.[11] A total of 85% felt much more difficult to consider donating the whole body for scientific or educational purposes than to donate parts of the body or undergo autopsy. The reasons for this were not explored in this study.

SOCIODEMOGRAPHIC FACTORS

In relation to attitudes in connection with dissection, there was no relationship either to age or to education, only to gender. Women were less often positive about donating their bodies than men in this study. The differences in reaction patterns between men and women suggest that women are more sensitive than men towards operation on their bodies, probably "cathecting" their bodies and including them into their "extended self," as has been suggested by Belk.[14]

A large number of religious and illiterate people felt some discomfort at the thought of own autopsy and organ donation. With regard to organ donation and autopsy, the younger generation were more often positive than the old as stated by Sanner M.[11] Religious beliefs have been found to be connected with attitudes toward organ donation in other studies.[15, 16]

The funeral is the last procedure that can be undertaken with the cadaver. In a recent research a connection was

noted between attitudes toward organ donation and funeral preferences.[15] This finding was confirmed in this present study: individuals selecting cremation were more often positive towards the donation of their own organs with relatives' organs and also towards autopsy and dissection. As the funeral is a very sensitive issue if care taken as per religious belief they are willing to accept the procedures as suggested.

A study by Parisi and Katz[17] indicates that only when the negative motives (discomfort reactions) concerning organ donation are weak has the intensity of the positive motives (such as altruism) any significance for the willingness to sign a donor card. This finding is supported by the above-mentioned interview study on people's reactions towards organ donation.

CONCLUSION

India has an important role to play in Asia and has the capacity to lead the way in transplant surgery. It has the law for it, the expertise and the hospital infrastructure to support the programme. It needs to streamline the implementation of its law, and promote the deceased donation programme.

Organ donation and autopsies provide peace of mind for the bereaved family in certain situations. A good understanding is needed amongst forensic pathologists, clinicians, hospital administrators, etc.

The autopsy room should not be seen as the place where sorrow and the spectre of death come alive, but rather it should be where death rejoices to aid the living. Organ donation and autopsy can give a new twist to the tragedy "organs wasted are the wastage of lives." Organ donation, autopsy and anatomic dissection must be encouraged by all for well being of members of the society and not to cause any harm to any of its members.

Acknowledgement: I am indebted to my wife Manmi Das Mahanta and to my kids Jacinth and Adriana for their help in various aspects.

Ethical clearance: Taken

Source of funding: Nil

Conflict of interest: Nil

REFERENCES

1. Shoorf Sunil. Organ Donation and Transplantation in India – Legal Aspects and Solutions to help with Shortage of Organs. J of Nephrology and Renal Transplantation 2009;2(1):23-34.
2. Shroff S, Navin S, Abraham G, Rajan P S, Suresh S, Rao S, Thomas P. Cadaver organ donation and transplantation-an Indian perspective. Transplant Proc 2003;35:15-7.
3. Hill RB, Andersson RE. The autopsy crisis re-examined: the case for a national autopsy policy. Milbank Q 1991;69:51-78.
4. Report of the Joint Working Party of the Royal College of Pathologists, the Royal College of Physicians of London and the Royal College of Surgeons of England: The Autopsy and Audit. London, England: Dept of Health and Social Security; 1991.
5. Report of the Committee on Transplantation. Kroppenefter Doden(The Body After Death). Stockholm, Sweden: Allmnna Forlaget; 1992. SOU 1992;16.
6. Prottas JM. Encouraging altruism: public attitudes and the marketing of organ donation. Health Soc 1983;61:278-306.
7. Horton RL, Horton PJ. A model of willingness to become a potential organ donor. Soc Sci Med 1991;33:1037-1051.
8. Mahanta P. Introduction and History of Forensic Medicine. Modern Textbook of Forensic Medicine and Toxicology. 1st ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2014. p. 3-7.
9. Jarcho S. Problems of the autopsy in 1670. Bull NY Acad Med 1971;47:792-796.
10. Kottler A. The Jewish attitude on autopsy NY State J. Med 1957;57:1649-1650.
11. Sanner M. A comparison of public attitudes towards autopsy, organ donation and anatomic dissection. A Swedish survey. JAMA 1994 Jan 26;271(4):284-8.
12. Mahanta P. The medico-legal autopsy, its religious and social attitudes. J Indian Acad Forensic Med 2010 April-June;32(2):183-187.
13. Sanner M, Den Doda Kroppen. Psykologiska och Socialmedicinska Aspekterpa Organdonation, Transplantation och Dodskriterier. Goteborg, Sweden: Socialmedicinsk Tidskrifts Skriftserie; 1991:No. 53.
14. Belk RW. Possessions and the extended self. J Consumer Res 1988;15:139-168.
15. Sanner M. Organ donation och Transplantation: Psykologiska Aspekter. Stockholm, Sweden: Allmanna Forlaget; 1989. SOU 1989;99.
16. Gabel H, Lindskoug K. 65% kan tanka sig att donera organ. Lakartidningen 1987;84:10651069.
17. Parisi N, Katz I. Attitudes toward posthumous organ donation and commitment to donate. Health Psychol. 1986;5:565-580.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

A Comparative Study of Electrocardiographic Changes and Blood Glucose Level in Athletes and Non-Athletes

Dutta Nandita[1], Dutta Choudhury Biju[2], Nath Neena[3], Saikia Anku Moni[4]

***Received** on March 22/2015; **accepted** (revised) on April 03/2015; **approved** by author on May 11/2015*

ABSTRACT

Regular physical exercise prevents the occurrence of cardiovascular and metabolic diseases, halts their progress and also decreases their intensity. It is very much important to study the cardiac changes and glyacemic status of an athlete, who enjoys the extreme height of physical fitness, and non-athlete. This study was done to see the physiological adaptive electrical cardiac changes and blood glucose level of athletes and compare the changes with non-athlete individuals. A total of 100 male athletes of Sports Authority of India, Guwahati and 100-age match male control that were non-athletes were studied. 12-lead resting E.C.G. was recorded using a BPL-CARDIART 108-DIGI electrograph and post-absorptive blood glucose level is estimated by glucose oxidase/peroxidase (GOD/POD) colorimetric method of Tinder. The significance of the difference of the mean was calculated by Student t-test. In this study, bradycardia and early repolarization is found to be more in athletes (27% and 24%) in comparison to non-athletes (0% and 12%) respectively. Significant difference noted in heart rate (66.55±11.40/sec Vs.80.64±12.35/sec); PR-interval (0.1502±0.027/sec. Vs. 0.1356±0.019sec); and QRS amplitude (33.87±5.68mm) vs. (26.98±4.85mm). Athletes showed significantly (92.42±9.75mg/dl Vs. 96.53±16.46mg/dl) better glycaemic status than the non-athlete group. Regular physical training cause asymptomatic physiological adaptive cardiac changes and it also helps to maintain better glycaemic status.

***Keywords**: Physical training, cardiac electrical activity, glycaemic status, sedentary person, adaptation change*

INTRODUCTION

In recent years physical exercise has gained prime importance in public life for enormous health benefits. Athletes do regular exercise to increase their endurance capacity and to delay fatigability. The stress of training they undergo affect their bodily mechanism to the ultimate limit which results in adaptive changes in cardiovascular function. A normal untrained person can increase cardiac output a little over four fold; while a well-trained athlete can increase output about six fold thereby increasing the cardiac reserve. Training causes cardiac muscle hypertrophy and increase in pumping effect of heart by 40-50% per beat in athlete than in untrained person, but there is corresponding decrease in heart rate at rest.[1]

E.C.G. is an acknowledged sensitive screening tool to gather information of heart rate and rhythm, abnormalities of conduction, muscular damage and hypertrophic changes of the heart. The cardiac adaptation induced in an athlete by physical training is reflected in athlete's

Address for correspondence and reprint:
[1]Assistant Professor
Dept. of Physiology, Gauhati Medical College, Assam
Email: ndnanditadutta@gmail.com
Mobile: 09864065763
[2]Professor, Dept. of Physiology, Gauhati Medical College Assam
[3]Associate Professor, Dept. of Medicine, Tezpur Medical College
[4]Associate Professor, Dept. of Community Medicine Gauhati Medical College

electrocardiographic finding. The physiological E.C.G. changes normally seen in athletes should be distinguished from pathological hypertrophic cardiomyopathies, which is a common cause of sudden cardiac death in young athlete,[2] before subjecting person to unnecessary further investigations. In addition to cardiac reserve, athlete also require energy during event and exercise. This energy is supplied mainly by carbohydrate diet. Increased levels of muscle glycogen and blood glucose level gives them more energy to perform well during event.[3]

Increased mobilization of glycogen to glucose does not alter the blood glucose level in athlete as regular exercise reduce insulin resistance, improves tissue sensitivity to insulin and glucose tolerance. Exercise also increase the number of insulin receptors and promotes activity of glucose transporters.[4] All these factors help to have a better control on blood glucose level. As there are very limited studies in the N-E region of India, the present study was undertaken with the objectives of studying the E.C.G. changes and blood glucose level in athletes and compares them with non-athletes.

MATERIAL AND METHOD

This cross sectional study was carried out among the athletes of the Sports Authority of India (SAI), Guwahati and an equal number of age matched non-athletes were taken as control. The study duration was from 1st January to 31st December 2010. The study subjects were briefed about the procedure and informed consent was obtained from each participant. 100 male athletes between the age group of 15-25 years were taken among the boarders of S.A.I. hostel who were actively involved in sports activity for last 3-5 years and also perform regular exercise two times a day and six days a week. For control male non-athletes matched for age, height and weight were taken.

Exclusion Criteria: Cases with history or symptoms of any cardio-vascular disorder, known diabetic and obese person were excluded from the study.

Both the groups were subjected to ECG and random blood glucose estimation. The ECG was done at resting condition in the morning hours, which were 24-48 hours after last physical exercise in athlete group and 3-4 hours after any meal. For control also ECG was done at resting condition in the morning hours and 3-4 hours after any meal. E.C.G. recording was done using a BPL CARDIART 108-DIGI electrograph with BPL ECG paper. The ECG room was comfortably warm and the subject was made to lie supine on a non-metallic examination table. The procedure was explained in advance to allay any apprehension to make him relax. Any external metallic object, electrical circuits and other electronic equipment were kept away from the subject so as to avoid interference to prevent artifacts. The parameters of ECG that were studied: Heart rate (from RR interval), P wave amplitude and duration, PR interval, QRS complex-amplitude and duration, ST segment, T wave changes, QT interval and mean axis of the standard leads.

After recording ECG, 2 ml of venous blood was collected under all aseptic and antiseptic precaution in a sodium fluoride vial from both the groups for random blood sugar (RBS) estimation. It was carried out in the dept. of Physiology, Gauhati Medical College. After keeping the samples undisturbed for 30-40 minutes the supernatant plasma was separated and centrifuged for 3 min at 3000 rpm. Glucose was then estimated in each serum sample by glucose oxidase/peroxidase (GOD/POD) colorimetric method of Tinder using the glucose kit, CREST BIOSYSTEMS, a division of Coral Clinical System, Goa. Using Mean, standard deviation and student t-test did statistical analysis.

RESULT

Figure 1 Represents the different types of sports the athletes are involved with.

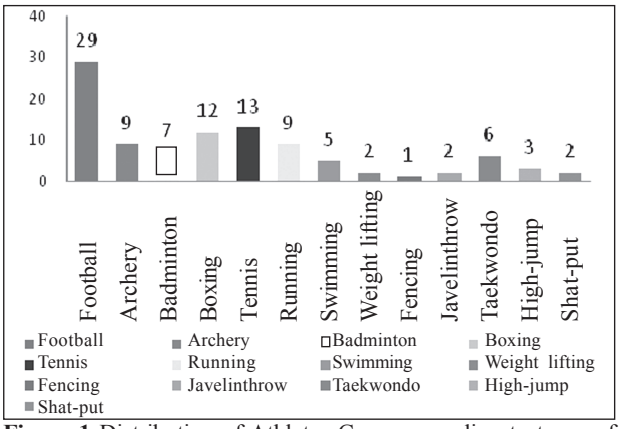


Figure 1 Distribution of Athletes Group according to types of Sports

In **Table 1**, physiological parameters like pulse rate, biochemical test of random blood glucose level and

systolic and diastolic blood pressure in athletes and non-athletes were depicted and comparison was made in the two groups. The results showed that athletes had a significant lower mean value of RBS than the non-athletes group [99.42vs 96.53 with p value –0.0328]. Pulse rate was significantly lower in athlete group [66.43vs79.76 with p value <0.0001] but no significant differences were found in systolic and diastolic blood pressure of both the group.

Table 1 Mean distribution of different parameters among the athletes and non-athletes and their 't' value

PARAMETERS	MEAN±SD		t- value (p-value)	Significance at 0.05 level
	ATHLETES (n=100)	NON-ATHLETES (n=100)		
Pulse Rate (Beats/min)	66.43±11.28	79.76±11.83	8.18 (0.0001)	Significant (p<0.05)
Blood Glucose (mg/dl)	92.42±9.75	96.53±16.46	2.15 (0.0328)	Significant (p<0.05)
B.P. (mmHg)	118.86±8.55	21.16±10.99	1.65	Not Significant (p>0.05)
-Systolic - Diastolic	75.42±7.01	176.16±6.12	0.79	Not Significant (p>0.05)

Table 2 Comparison of mean values of ECG parameters among the athletes and non-athletes

ECG Parameters	Athlete (n=100) (Mean±SD)	Non-athlete (n=100) (Mean±SD)	t-value	Significant at 0.05 level	P-value
Heart Rate (Beats/min)	66.55±11.40	80.64±12.35	8.38	Significant (p<0.05)	< 0.0001
PR interval (sec)	0.1502±0.027	0.1356±0.019	4.42	Significant (p<0.05)	< 0.0001
RR interval(msec)	91.44±17.24	75.90±11.05	7.59	Significant (p<0.05)	< 0.0001
P-wave					
• Duration(sec)	0.08±0.005	0.08±0.006	---	NS	
• Amplitude (mV)	0.14±0.04	0.14±0.04	---	NS	
QRS Complex					
• Duration(sec)	0.09±0.009	0.09±0.009	---	NS	<
• Amplitude (mm)	33.87±5.68	26.98±4.85	9.22	Significant (p<0.05)	0.0001
QT interval (sec)	0.39±0.02	0.36±0.02	---	NS	

In the **Table 2**, electrocardiographic parameter showed significant lower heart rate (p<0.0001) in the athlete group, whereas PR interval, RR interval and amplitude of QRS complex are significantly (p< 0.0001) higher in athlete group in comparation to non-athlete group. No significant difference was noted (p> 0.05) in P-wave, QRS duration and QT interval among the two groups.

Table 3 Distribution of respondents according to bradycardia, early repolarization, A-V block and axis deviation

Group	Bradycardia	Early repolarization	1^0 A-V block	RBBB with right axis deviation
Athletes	27%	24%	2%	2%
Non-athletes	0%	12%	0	0

Table 3 depicts that 27% from athlete group showed bradycardia and 2% showed 1^0 atrio-ventricular blocks respectively. Incomplete RBBB with right axis deviation was also found among 2% of athlete; whereas neither of them was present among non-athletes group. Incidence of early repolarization is more in athlete group than in the non-athlete group.

Again in the present study, it was noted that 27% of the athletes' ECG showed isolated QRS voltage criteria for LVH and 4% of the non-athlete also has LVH according to voltage criteria which may be found in young person.

DISCUSSION

Trained athletes commonly show electrocardiographic changes such as sinus bradycardia, 1^0 atrioventricular block and early repolarization, which result from physiological adaptation of cardiac autonomic nervous system to athletic conditioning. Trained athletes often exhibit pure voltage criteria for left ventricular hypertrophy that reflect the physiological ventricular remodeling with increase ventricular wall thickness and chamber size,[5] termed as "athletic heart". Resting sinus bradycardia is common in athlete depending on the type of sports and the level of training. It is easily overcome with exercise, suggesting high vagal tone which causes slowing of the sino-atrial node. However, it is noteworthy that chemically denervated hearts in athletes have significantly lower intrinsic heart rates than those of sedentary control, which suggests that sinus pacemaker cells are influenced by athletic conditioning independent of neural input.[6] Various studies done previously on athlete's cardiac activity on E.C.G. showed similar findings as the present study. A. Lawan and Coworkern[7] noted bradycardia, 1p A-V block and ventricular hypertrophy in 150 athlete[10] in their study. R.J. Northcole et al[8] in another study got profound bradycardia and heart block pattern. Similarly, N. Hanne

Paparo et al[9-11] found that the most common E.C.G. finding in trained athletes were sinus bradycardia, A-V conduction disturbances, left and right ventricular hypertrophy and various disturbances of the repolarization phase.

First degree and Morbitz type I second degree atrio-ventricular block are also frequently encountered in trained athlete being present in 35% and 10% respectively.[12] As with sinus bradycardia, atrio-ventricular slowing and block are mediated by increase parasympathetic tone and/or decrease sympathetic tone.

Intensive athletic conditioning is associated with morphological cardiac changes, including increase cavity dimensions, wall thickness and ventricular mass, which are reflected on the 12-lead electrocardiogram.[13] Physiological LVH usually manifests as an isolated increase of QRS amplitude with normal QRS axis, atrial and ventricular activation patterns, normal ST segment and T wave repolarization.[14, 15]

In the present study, using Sokolov and Lyon criteria we got the incidence of LVH 27% and 4% in athlete and non-athlete respectively. Several studies have reported a high incidence of athlete's ECG that fulfill electrocardiographic left ventricular hypertrophy if the criteria of Sokolow and Lyon are used, i.e., S in V1 + R in V5/ V6> 35 mm, or R>27 mm in V5/V6.[16] Non voltage ECG criteria for LVH like atrial enlargement, left axis deviation and a 'strain' pattern of repolarization, which are incorporated into Romhilt-Estes point score system, are usually not seen in athletes.[15] These ECG abnormalities raise suspicion for underlying cardiac pathology.

The present study found 2% RBBB among athletes. Incomplete RBBB is more often noted in athletes engaged in endurance sports and it has been suggested that the right ventricular conduction delay is not within the specialized conduction system, but is caused by the enlarged right ventricular cavity size and/or increased cardiac muscle mass and the resultant increase conduction time.[17] The present finding of 24% early repolarization among athletes could be considered as physiological. This reflects the development of a training related hypervagotonia in athletes. Early repolarization is a benign ECG pattern in the general population of young people and more specifically among highly trained athletes in resting ECG.[18]

These adaptational electrocardiographical abnormalities are reversible phenomenon which reduces or disappears with deconditioning[19] and should be clearly separated from uncommon and training unrelated ECG patterns, like ST-T repolarization abnormalities, pathological Q wave, left axis deviation, intraventricular conduction defects, ventricular pre-excitation, long and short QT interval and Brugada like repolarization changes which may be the expression of underlying cardiovascular disorders, notably inherited hypertrophic cardiomyopathies or ion-channel diseases which may predispose to sudden cardiac death. In this study, the mean blood sugar level was found to be 92.42±9.75 mg/dl in athletes; while it was 96.53±16.46 mg/dl among the non-athletes. Though not much difference was observed, the random blood glucose level in our study showed that it was slightly lower in the athlete group than in the non-athlete group ($p<0.05$). Sedentary persons are more prone for obesity and central fat deposition, which are strong predictors of insulin resistance.[20] Several training studies have demonstrated that regular aerobic exercise leads to enhance insulin sensitivity in previously sedentary person. The cumulative effects of exercise training to enhance insulin sensitivity are markedly different from the effect of single bout of exercise to enhance insulin sensitivity as long term exercise program is associated with improved insulin action at whole body and tissue level.[21] S.Nayak etal[22] observed better glucose tolerance in athlete than in non-athlete control group. R.E. Frisch et al[23] studying the prevalence rate of diabetes among athlete and non-athlete reported it was 0.5% in athlete and 1.3% in non-athlete.

The extent of cardiac morphological and electrical changes in trained athletes varies with the athlete's gender, race, level of fitness and type of sports[24] in which field further study is necessary. Regarding glycaemic control effect of regular exercise, a longitudinal study over longer period might have been more specific. But cross sectional random blood glucose level is acceptable as shown in the study done by Gill, Hardy et al[25] as done in present study.

CONCLUSION

This present study led to the conclusion that in trained athletes ECG findings are consistent with remodeling of cardiovascular system. But findings of pathological heart disease should be investigated by further specialized tests. By doing regular exercise, which improves insulin sensitivity and lower insulin resistance, the development

of type II diabetes can be checked and a healthy life can be assured.

Acknowledgement: Director and physical tutor of Sports Authority of India N-E region sub center, for their help and allowing the work in their premises of their athletes in their sport hostel.

Ethical clearance: Taken.

Conflict of Interest: None.

Contribution of Authors: We declare that the author(s) named in this article did this work and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. The study was conceived and designed by Dr. Nandita Dutta, who also collected and analyzed the data. Dr. Biju Dutta Choudhury, Dr. Neena Nath, Dr. Anku Moni Saikia contributed to analyze the data and designing the manuscript.

REFERENCES

1. Guyton AC, Hall JE. Textbook of medical physiology: sports physiology. 11th ed. Philadelphia: Saunders Elsevier; 2006. p. 1055-66.
2. Brukner P, Khan K. Clinical sports medicine. 3rd ed. Sydney: McGraw Hill; 2008. p. 809-16.
3. Pal GK. Textbook of Medical Physiology. New Delhi: Ahuja publication; 2007. p. 1010-22.
4. Barrett KE, Barman SM, Boitano S, Brooks HL. Ganong's review of medical physiology. 23rd ed. NewYork: McGrawHill; 2010. p. 315-35.
5. Corrado D, Pelliccia A, Heidbuchel H, Sarma S, Link M, Basso C et al. Recommendations for interpretation of 12-leads electrocardiogram in athlete. Euro Heart J 2010;31(2):243-59.
6. Stein R, Medeiros CM, Rosito GA, Zimerman LI, Ribeiro JP. Intrinsic sinus and atrioventricular node electrophysiologic adaptations in endurance athletes. J Am Call Cardiol 2002;39(6):1033-38.
7. Lawan A, Ali M.A, Bauchi D. Evaluation of 12-lead ECG in athletes and non-athletes in Zaria, Nigeria. Pak J Physiol 2008;4(1):27-29.
8. Northcote R.J, Canning GP, Ballantyne D. Electrocardiographic findings in male veteran endurance athlete. British heart J 1989;61(2):155-60.
9. Hanne-Paparo N, Kellerman J. Long-term Holter ECG monitoring of athletes. J Med Sci Sports Exercise 1989;13(5):294-98.
10. Hanne-PaparoN,Wendkos MH, Brunner D.T.T wave abnormalities in the electrocardiograms of top-ranking athletes without demonstrable organic heart disease. Am Heart J 1971;81(6):743-47.
11. Drory Y, Hanne-Paparo N, Schoenfeld Y, Shapira Y, KellenmannJ.Common ECG changes in athletes. Cardiology 1976;61:267-78.
12. Zehender M, Meinertz T, Keul J, Just H. ECG variant and cardiac arrhythmia in athletes: Clinical relevance and prognostic importance. Am Heart J 1990;119(6):1378-91.
13. Huston TP, Puffer JC, Rodney WM. The athletic heart syndrome. N Engl J Med 1985;313(1):24-32.
14. Sarma S, Whyte G, Elliot P, Padula M, Kaushal R, Mckenne WJ et al. Electrocardiographic findings in 1000 highly trained junior elite athlete. British J of sports medicine 1999 Oct;33(5):319-24.
15. Pelliccia A, Maron BJ, Culasso F, DiPaolo FM, Spataro A, Biffi A et al. Clinical significance of abnormal electrocardiographic patterns in trained athletes. Circulation 2000;102:278-84.
16. Sokolow M, Lynon TP. The ventricular complex in LVH as obtained by unipolar precordial and limb lead. Am Heart J 1949;37(2):161-86.
17. Langdeau JB, Blier L, Turcotte H, Baulet LP, O'Hara G. Electrocardiographic findings in athletes: the prevalence of LVH and conduction defects. Can J Cardiol 2001 Jun;17(6):655-9.
18. Bianco M, Bria S, Senna N, Palmieri V, Zeppilli P, Gianfelici A. Does early repolarization in athlete have analogies with the Brugada syndrome? Eur Heart J 2001 Mar;22(6):504-10.
19. Puffer JC. The athletic heart syndrome. The physician and sports medicine 2002 July;30(7):41-47.
20. Doherty RO, Stein D, Foley J. Insulin resistance. Diabetologia 1997 Oct;40 Suppl 3:B10-B15.
21. Houmand JA, Dolan PL, Shinebarger MH, Leggett-Frazier N, Bruner RK, McCammon MR, et al. Exercise training increase GLUT4 protein concentration in previously sedentary middle age men. Am J Physiol 1993;264:E896-E901.
22. Frisch R E, Wyshak G, Albright TE, Albright NL, Schiff I. Lower prevalence of diabetes in female former college athletes compared with non- athletes. Diabetes 1986;35(10):1101-5.23.
23. Nayak S, Maiya A, Hande M. Influence of aerobic treadmill exercise on blood glucose homeostasis in noninsulin dependent diabetes mellitus patients. Indian J of clinical biochemistry 2005;20(1):47-51.
24. Holly RG, Shaffrath JD, Amsterdam EA. Electrocardiographic alterations associated with the hearts of athletes. Sport Med 1998;25:139-48.
25. Gill GV, Hardy KJ, Patrick AW, Masterson A. Random blood glucose Estimation in Type 2 Diabetes: Does it Reflect Overall Glycaemic Control? Diabetic medicine 1994;11(7):705-8.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Treatment of Clubfoot by Ponseti Method: Our Experience

Talukdar Dhrubajyoti[1], Bhattacharyya Tulasi Das[2], Dey Sukalyan[3], Dutta Nayanmoni[4], Baruah Siddhartha[5]

***Received** on March 28/2015; **accepted** (revised) on April 11/2015; **approved** by author on May 11/2015*

ABSTRACT

Historically clubfoot was recognized and documented since the time of ancient Egyptians. Hippocrates introduced Talipeseqinovarus into medical literature in 400 B.C. Although different treatment methods have been described with varying degrees of success, Ponseti method in clubfoot correction with its well-documented long-term success rate, is becoming an accepted treatment method all over the world.

The objective of this study was to prospectively evaluate the short-term results of using the Ponseti technique for treatment of 418 children with clubfoot deformity, and to determine if the number of extensive corrective surgeries can be reduced in these children.

Consecutive cases were studied between July 1st - 2012 to July 31 - 2014 at Gauhati Medical College and Hospital, Guwahati. A total of 418 cases were studied. These included 277 male and 141 females, 227 bilateral, 191 unilateral (Right=119, Left=72) cases. Idiopathic clubfoot constituted 399 cases while 19 cases were syndromic. For casting, plaster of Paris (POP), bandage and cotton roll was used; for Tenotomy local anesthesia and 15 number surgical blades, and for maintenance of correction Steenbeek foot abduction brace was used for this procedure.

The Ponseti method is a safe and effective treatment for congenital Talipesequinovarus, and radically decreases the need for extensive corrective surgical procedures. With its low rate of complication, high effectiveness, low cost and need for minor surgery like a percutaneous Tenotomy of Achillestendon, Ponseti method has unmatched potential in developing countries like India.

***Keywords**: Clubfoot, Ponseti method, serial manipulations and casting, percutaneous Tenotomy of the Achilles tendon*

INTRODUCTION

Clubfoot or more correctly CTEV[1] is one of the commonest congenital abnormalities found in children all over the world with an incidence of about 5-6/1000 live births.[2] No two clubfeet are the same; the statement highlights the challenge that the deformity presents. At the same time, the importance of accurate and complete treatment of the clubfoot cannot be over emphasized especially in a country like India, where any deformity becomes a cause of social ostracism. Misconceptions regarding etiology, pathology and efficacy of the treatment have been largely perpetuated in the expansive literature. The disappointing long term results of treatment through complex surgical procedures has inspired some to seek out less invasive, more conservative methods typified by Ponseti method.

Address for correspondence and reprint:
[1]Assistant Professor (**Corresponding Author**)
Email: dhruba15413@gamail.com
Mobile: 09864014215
[2] Prof and HOD, [3] Registrar, [4]Post Graduate Student, [5]Post Graduate Student
Department of Orthopedics
Gauhati Medical College, Assam, India

Dr. I.V. Ponseti, Prof. Emeritus[3, 4], University of Iowa has been the pioneer of manipulation and casting for the management of this problem. He first published his article in 1963,[5] but his efforts were neglected initially till 1995 when he published his results with 35 years of follow up. Since then this technique is gaining momentum all over the world because of its advantages of low cost, minimum surgery and good results if properly done. Although Kite[6, 7] was the leading advocate of conservative treatment of clubfoot for many years his treatment was lengthy and short of satisfaction. Kite corrected each component of the deformity separately instead of simultaneously, and although he managed to correct foot cavus, and pronation and its harmful consequences, the correction of heel varus took him inordinate amount of time.

Many children in low-income countries (about 80% occurring in the developing world)[8] end up in neglected or untreated CTEV because of lack of treatment facility. The objective of this study was to prospectively evaluate the short-term results of using the Ponseti technique for treatment of 418 children with clubfoot deformity, and to determine if extensive corrective surgery was necessary in these children. Percutaneous Tenotomy of tendo Achilles was included in the Ponseti method of treatment.

PATIENT AND METHODS

All the patients in the present study were treated at Gauhati Medical College and Hospital, Guwahati, Assam, India. During July 1st, 2012 – July 31, 2014, 418 patients all below the age of 10 years were treated by Ponseti method.[9, 10] Correction and part of maintenance through follow up was continued till the end of bracing. Informed consent was taken from the parents of all the children included in the study.

The study included both idiopathic and syndromic clubfoot. Out of 418 patients, 399 were idiopathic and 19 were syndromic. Neglected clubfoot was also included in the study. Total number of male patients were 277, and 141 were females. 191 cases were unilateral. 15 patients gave a history of having at least one affected relative. 213 patients presented in the age group of 0-3 months while 52 cases were neglected clubfoot.

For casting, POP bandage and cotton roll was used. For Tenotomy, local anesthesia, sterile syringe and needles and 15 number surgical blades were used. For maintenance of correction, Steenbeek foot abduction splints were used. All parents of the children were questioned,and children were examined regarding presence of birth defects, neuromuscular or skeletal defects. Maternal history of the pregnancy like oligo or polyhydramnios, any radiological exposure during pregnancy, history of drug intake, maternal illness, consanguineous marriage, and any positive family history were taken. The parents were extensively counselled as regards the nature of deformity, treatment plan, the goal of achieving a cosmetically acceptable and plantigrade foot and importance of follow up. The treatment was free, and a counsellor was also available.

The severity of the deformity was assessed using the modified Piraniscoring.[11, 12] The Ponseti method was used in our institution according to the following regime. Correction of the deformity by weekly serial casting, maintenance of correction by Steenbeek foot abduction brace[13], and percutaneous Tenotomy of the Achilles tendon if required. Treatment was started as soon as possible after referral, preferably shortly after birth as and when the skin permitted, and consisted of gentle manipulation and serial application of long leg plaster casts without the use of anesthesia as described by Dr. Ponseti. After achieving adequate abduction and no equinus deformity, the baby is put on splint 23 hours a day for the first 3 months, and then 14 hours a day for 3 years.

Decision to perform a tendo Achilles tenotomy[14] under local anesthesia would be taken depending on the Pirani score vis a vis HS*>1, MS*<1 with the head of the talus well reduced. After achieving satisfactory correction cast is applied for 3 weeks and then the Steenbeek splint is applied 23 hrs a day for the first 3 months, and then 14 hours a day for 3 years.

*HS: hind foot score, MS: mid foot score

RESULTS

The study was carried out in 418 patients who were less than 10 years of age attending the outpatient department of orthopedics in Gauhati Medical College Hospital from July 1st, 2012 – July 31st,2014.

Sex Ratio: Out of total 418 cases 277 were male and 141 cases were female. In this study, male and female ratio was 1.96:1 which correlates well with Turco series.

Laterality: The laterality is shown in **Figure 1**. The distribution were as follows: bilateral – 227, unilateral – 191, unilateral (right) – 119 and unilateral (left) – 72.

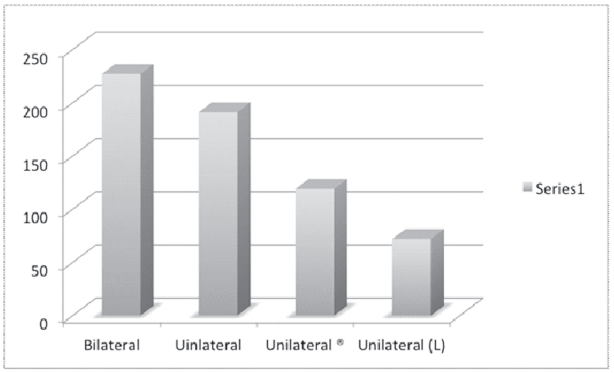


Figure 1 Laterality of cases

In our series the prevalence of bilaterality corresponds to 54.3 % bilateral, 28.4 % right sided, 17.2 % left sided.

Evaluation of Results: In our study, the average number of casts required per patient was 5.16. Fifty-three (12.6 %) patients required more than 8 casts. There were 22 patients in the casting treatment stage, and 100 casting dropouts. Tenotomy was performed in 58 patients, and not performed in 418 patients. The percentage of tenotomies performed was 13.87 %. There was no Tenotomy dropouts, or any patient in Tenotomy treatment stage.

Bracing was done for all patients upto the age of 4 years. There were 158 patients in bracing treatment stage and 84 bracing dropouts. Good brace compliance was seen in 118 patients while poor compliance was seen in only 1 patient. 15 had moderate brace compliance. None of the patients required postero-medial soft tissue release surgery (PMSTR).

RELAPSE

Total number of relapse patients were 24. Re-casting, bracing with or without Tenotomy was the treatment for all relapsed patients. None of the relapsed patients underwent PMSTR or other extensive corrective surgeries.

CLINICAL PHOTOGRAPHS

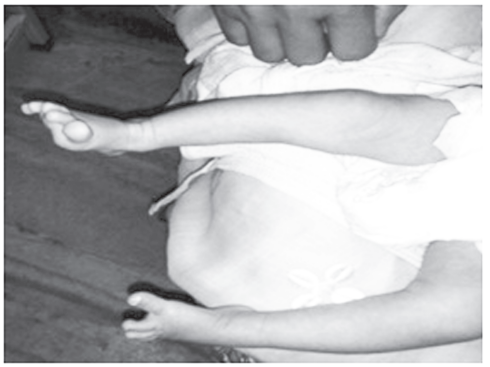


Figure 2 Clubfoot

Figure 3 POP cast application

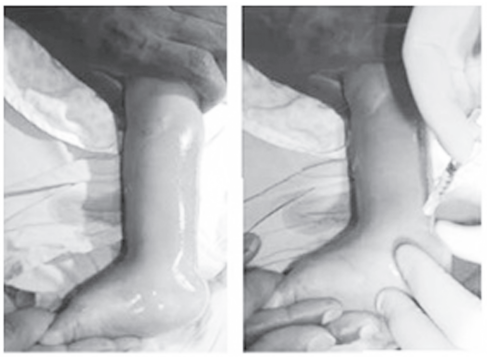


Figure 4 Tenotomy procedures

Figure 5 Corrected deformities

Figure 6 Steenbeck foot abduction brace

Figure7 Complication of Application

Figure 8 Clubfoot babies in different stages of treatment

DISCUSSION

He identified congenital Talipes equinovarus was known to medical world since the time of Hippocrates; manipulation and holding the foot in corrected position as early as 400 B.C. Several indigenous casting methods have evolved in the past based on pure logic to undo the deformity by producing the force in the opposite direction. J.H.Kites was the most precise in describing his technique and reported a success of 90%. However when used by other surgeons this method had a low correction and high relapse rate.

Several studies have surfaced demonstrating the successful use of Ponseti method in clubfoot correction, so much so that the method is becoming an accepted method of clubfoot treatment all over the world. Some of these patients who were followed up for 30 years showed no deterioration of function or appearance of the feet. In our study the average number of casts required was 5.16, which is much less than any traditional method. The average number of days of treatment was also less. The less number of tenotomies in our study in comparison to other series is due to dropouts in the pre tenotomy stage, and also due to unwillingness of the parents for any surgical interventions. This also explains more number of castings in few patients than what is proposed by Ponseti. The number of patients requiring surgical correction by extensive soft tissue release procedures like PMSTR was much reduced by Ponseti method.

Table 1 Types of surgical methods

Different research works	Ponseti method	Traditional method
Sudhir Kapur et al	8.3 %	32.3 %
A.V. Sanghvi	1 %	6 %
John E. Herzenberg	3 %	91 %
Present study	None	-

The major concern in the operative treatment of congenital clubfoot is functional outcome. Numerous reports shows good results for the first 10 years of life. However as the child with clubfoot becomes an adult, the functional results often deteriorate. Open surgical release often leads to scarring and stiffness of the ankle with resulting limitation of movement and strength.[15, 16, 17, 18, 19] Aronson and Puskarich[20] studied the disability associated with various clubfoot treatment options. Patients who had undergone PMSTR had reduced ankle plantar flexion motion and diminished push off strength. Our patients who were treated with Ponseti method had much better ankle range of motion, both in dorsiflexion and plantar flexion. The patients were also saved from the complications of general anesthesia and all the complications of a major surgical

procedure as percutaneous Tenotomy; a minor procedure was performed under local anesthesia.

COMPLICATIONS

We came across a few minor complications like plaster ulceration in the thigh, angioedema of the feet in a minority of patients. These were treated by dressing and foot elevation and loose cast application.

CONCLUSION

Ponseti method is a safe, effective, economical and reliable method of treatment for both idiopathic and syndromic clubfoot. The method requires a simple procedure of Tenotomy, which can be done under local anesthesia on OPD basis. The needs for extensive soft tissue procedures, and the side effects associated with these, are substantially reduced if the method is done correctly in experienced hands. This will reduce the cost, hospital stay, and economic burden in a country like India.Our study has also reaffirmed the effectiveness and usefulness of Ponseti technique in clubfoot correction.

Acknowledgement: All the teaching and non-teaching faculty of department of orthopedics along with counsellors of Cure International, Guwahati, Assam for their help in different aspects.

Conflict of interest statement: The authors declare that they have no conflict of interest related to the publication of this manuscript.

Contribution of authors: We declare that the authors named in the article did all the work and all liabilities pertaining to claims relating to the article will be borne by the authors.

Ethical clearance: Ethical clearance for the study was taken from ethical committee.

REFERENCES

1. Stephens MM. Congenital TalipesEquinovarus. Ir Med J 1990;83:48-9.
2. Ikeda K. Conservative treatment of idiopathic clubfoot. J Paediatric Ortho 1992;12:217-23.
3. PonsetiIV. Treatment of congenital clubfoot. J Bone Joint Surg Am 1992;74:448-454.
4. Ponseti I, Staheli LT. Clubfoot: Ponseti management. 2005, [Seattle, Wash.]: Global-HELP.
5. Ponseti IV, Smoley EN. The classic: congenital club foot: the results of treatment. 1963. Clin OrthopRelat Res 2009;467:1133-45.
6. J.H.KITE, M.D. 'Principles involved in the treatment of congenital clubfoot' J Bone Joint Surg 1989;21:595.
7. Kite J1–I. Some suggestions on the treatment of clubfoot by casts. J bone joint surg Am 1963;45A:407–413.
8. Bridgens J, Kiely N. Current management of clubfoot (congenital talipes equinovarus). BMJ 340:c355.
9. Goksan SB. Treatment of congenital clubfoot with Ponseti method. ActaOrthopTraumatolTurc 2002:36(4):281-8.
10. Ponseti IV. Congenital Clubfoot: Fundamentals of Treatment. Oxford, England: Oxford University Press; 1996.
11. Pirani S, Outerbridge HK, Sawatzky B, Stothers K. A reliable method of clinically evaluating a virgin clubfoot evaluation.
12. Pirani S, Hodges D, Sekeramayi F. A reliable method of assessing the amount of deformity. SICOT/SIROT - XXII World Congress 2002.
13. Ponseti IV. Common errors in the treatment of congenital clubfoot.lntOrthop 1997;21:137–41.
14. Morcuende JA, Dolan LA, Dietz FR, Ponseti IV. Radical reduction in the rate of extensive corrective surgery for clubfoot using the Ponseti method. Pediatrics 2004;113:376–80.
15. Drummond DS, Cruess RO. The management of foot and ankle in arthrogryposis multiple congenita. J Bone Joint Surg Br 1978;60:96–99.
16. Guidera KJ, Drennan JC. Foot and ankle deformities in arthrogryposis multiplex congenita. Clin Orthop 1985;194:93–98.
17. Niki H, Staheli LT, Mosca VS. Management of clubfoot deformity in amyoplasia. J Pediatr Ortho 1997;17:803–807.
18. Zimbler S, Craig CL. The arthrogryposis foot: plan of management and results of treatment. Foot Ankle 1983;3:211–219.
19. Widmann RF, Do TT, Burke SW. Radical soft-tissue release of the arthrogrypotic clubfoot. J Pediatr Orthop B 2005;14:111–115.
20. Aronson J, Puskarich Cl. Deformity and disability from treated clubfoot. J Pediatr Orthop 1990;10:109–19.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

ORIGINAL PAPER

Awareness and Utilization of Village Health and Nutrition Day (VHND) Services- 'A Community Based Study'

Barua Kabita[1], Baruah Rupali[2], Saikia Anku Moni[3]

***Received** on March 28/2015; **accepted** (revised) on April 11/2015; **approved** by author on May 11/2015*

ABSTRACT

Village Health and Nutrition Days (VHND) were introduced by the National Rural Health Mission (NRHM) to improve access to essential maternal, newborn, child health and nutrition services at village level. Purpose of the study was to assess awareness of VHND services among rural mothers in Kamrup district of Assam and to estimate utilization of the services in beneficiaries and any gap(s) thereof. A cross-sectional study with multistage random sampling design was undertaken in rural areas of Kamrup from August 2013 to July 2014 among 387 mothers with infants. They were interviewed using a pre-designed and pre-tested semi-structured interview schedule. 86% of the respondents were aware of services provided in VHND, 73% respondents ever attended a session, 76% attendees availed antenatal check-up in VHND. Only 44% availed postnatal check-up. 77% of the infants were reportedly weighed in VHND. Only 48% infants had their weights plotted in growth chart. 47% beneficiaries attended Nutrition Health Education Counselling and Demonstration (NHED) sessions. Services in VHND were not utilized to the optimal extent by beneficiary mothers in rural Kamrup. Gaps in utilization of services were found mainly in relation to postnatal care, growth monitoring, counselling for family planning and NHED.

***Keywords**: Maternal, newborn, NRHM, rural, beneficiary*

INTRODUCTION

Healthcare in rural areas where the majority of the country's population live has been one of the greatest challenges faced by the Government of India. Village Health and Nutrition Days (VHND) were introduced by the National Rural Health Mission (NRHM) to improve access to essential maternal, newborn, child health and nutrition services at village level.[1] Organised by the Village Health Sanitation and Nutrition Committees (VHSNC) across the country, they are intended to work as common platform for convergence amongst service providers of Health, Integrated Child Development Services (ICDS) and the community.[2] VHNDs are required to provide a basket of health and nutrition services and counselling to the community on a pre-designated day (preferably on Wednesdays and for those villages that have been left out, on any other day of the same month) and place (usually at the Anganwadi centre). If regularly and effectively organized they can bring about the much needed behavioural changes in the community and induce health-seeking behaviour leading to better health outcomes.[3] Along with the rest of the states, the Government of Assam has also adopted the concept and

Address for correspondence and reprint:
[1]Post Graduate Trainee (**Corresponding Author**)
Mobile: 8761873177
Email: barua.kabita.28@gmail.com
[2]Professor and Head, [3]Associate Professor, Department of Community Medicine, Gauhati Medical College

guidelines have been issued regarding the planning and the conduct of the sessions.[4]

Maternal and child mortality levels in India are high compared to that of a developed nation. United Nations estimates suggest that in 2013, India contributed to 17% (5000) of world's maternal deaths.[5] Assam has the ignominy of having the highest Maternal Mortality Ratio (MMR) in the country at 300 per 100,000 live births.[6] Infant Mortality Rate (IMR) in Assam in 2013 was among the highest at 54 per 1000 live births.[7] Evidence is growing that primary care strategies centred on community based interventions are effective in reducing neonatal and maternal deaths in countries with high mortality rates, even if institutional approaches are necessary.[8] Full participation of the community in the planning and implementation process of the interventions is considered among the prerequisites of the primary care approach.[9] VHND being one of the recommended processes for increasing community involvement and communitisation can be successfully used as an effective platform for provision of first-contact primary health care.[2] Accredited Social Health Activists (ASHAs) along with Anganwadi Workers (AWWs) are responsible for mobilising the community for VHND with support from Panchayati Raj Institutions (PRI) and holding health education sessions. Auxiliary Nurse and Midwives (ANMs) provide maternal, newborn and child health services such as antenatal care and routine immunisation.[1]

It has been found that under nutrition causes 35% deaths among children under five and 11% of the total global disease burden.[10] National Family Health Survey in India in 2005-06 showed that 40% children under five years old were underweight for age.[11] Implementation of Growth monitoring and promotion specially focusing in the younger age group of 0-36 months is crucial to prevent malnutrition.[12] AWWs are responsible to provide growth monitoring services in VHND and referral of children with Severe Acute Malnutrition (SAM) along with distribution of supplementary nutrition.[1] The sessions have been organized in Assam since 2007. However, community-based data regarding the awareness of the beneficiaries about the available services in VHND and any gap in utilization of the services are not well known. Present study was initiated with the objectives to assess the awareness of VHND services among rural mothers in Kamrup district of Assam and to estimate the utilization of services and any gap(s) thereof.

METHODOLOGY

Study type, area and population:

Kamrup district is situated in the western part of Assam in India and comprises of twelve health blocks. A community-based cross sectional study was undertaken in rural areas of three health blocks of Kamrup namely, Boko, Hajo and Sualkuchi. The study was conducted from August 2013 to July 2014 among 387 mothers with infants. Eligibility criteria for the study population: mothers who had delivered within the past one year prior to the study and were residents of the study area. The subjects were selected after obtaining verbal and written informed consent.

Sample size and sampling design

As per Annual Health Survey (2010-11) in Assam, utilization of full antenatal care (three Antenatal check up) in rural areas of Kamrup district was 68.1%.[6] Assuming an expected utilization of full antenatal care in VHND setting of 68.1% (P=68.1%) and with 95% confidence interval and 7% permissible error (E) of P and applying the formula $4\ Pq/E^2$, the minimum sample requirement was 383. A multistage sampling design was adopted. A total of twelve health blocks in Kamrup district was the first stage unit out of which three were randomly selected using lottery method. List of the villages in the blocks were obtained as second stage units. From the list, 43 villages were selected by simple random sampling using random number table. To get desired sample of 383 beneficiary mothers, nine sample units were required from every village finally giving a sample size of 387 which was adequate for the study. List of mothers (who had delivered in the past one year) in a village was obtained from the ASHA; from the list, sample units were selected by simple random sampling.

Ethical clearance and data collection

The study proposal was approved by the Institutional Ethics Committee. Data collection was done through house to house visits and interview of mothers using a pre-designed and pre-tested semi-structured interview schedule. Among different variables were: demographic variables (maternal age, religion, caste, education) and information pertaining to awareness and utilization of services in VHND.

Statistical analysis: Data entry and analysis were done using SPSS for Windows software (Version 20.0; SPSS Inc, IL, Chicago, US). Results were expressed in terms of percentages and proportions.

OBSERVATION AND RESULTS

Study subjects

Out of the 387 respondents in the study area, majority (36.7%) were in the age group of 20-24 years. More than half (51.2%) mothers were Hindus while Muslims and Christians constituted 36.4% and 12.4% respectively. Majority of the mothers (31.8%) belonged to Scheduled Tribe (ST) followed by 25% mothers in Scheduled Caste (SC). 77 % of the respondents were literate as shown in **Table 1**.

Table1 Selected demographic variables of the respondents (n=387)

Variables		Frequency	Percentage (%)
Age group (years)	<20	27	7
	20-24	142	36.7
	25-29	136	35.1
	30-34	66	17.1
	>35	16	4.1
Religion	Hindu	198	51.2
	Muslim	141	36.4
	Christian	48	12.4
Caste	SC	97	25.1
	ST	123	31.8
	OBC	87	22.5
	General	80	20.7
Education	Illiterate	89	23
	Up to Primary School	127	32.8
	Middle to High	109	28.2
	Above High School	62	16

Awareness and participation in VHND

Out of the 387 beneficiary mothers interviewed, 86%(333) were aware of the services provided in VHND. Source of information in the majority was the ASHA and/or the ANM. 73%(283) of the respondents ever attended VHND session held in their village. Only 32% of them reported the presence of PRI members, school teachers and Self-help group (SHG) members from the community in the last session attended. 77% of the attendees reported the presence of all three frontline health workers (ASHA, ANM and AWW) in the last session as shown in **Table 2**.

Table 2 Awareness and participation in VHND by respondents

Particulars	Frequency	Percentage (%)
Awareness of services (n=387)		
Yes	333	86
No	54	14
Source of information (n=333)*		
ASHA and/ or ANM	290	87
AWW	218	65
Relative/neighbour	170	52
Ever attended VHND session (n=387)		
Yes	283	73
No	104	27
Reported presence of PRI/SHG members/teachers# (n=283)		
Yes	911	32
No	92	68
Reported presence of all three# (ASHA/ANM/ AWW) (n=283)		
Yes	218	77
No	65	23

** Multiple responses were cited# (in the last VHND session attended)*

Reasons for not attending VHND

Of the 104 respondents, who did not attend VHND, 32% responded that they didn't have prior information about the observation of the day in their village, which reflects deficiency in the part of the concerned health workers to pass on the information **Table 3**.

Table 3 Reasons for not attending VHND in respondents (n=104)

Reasons	Frequency	Percentage (%)
Unaware about VHND	54	14
Didn't have prior information about observation of the day	33	32
Preferred private practitioners/ hospitals for the services	17	16

Utilization of services in VHND

76% of the beneficiary mothers who attended VHNDs utilized full antenatal check-up (during antenatal period) while only 44% availed post natal check-up. 85% of the mothers availed TT immunisation and 98% availed immunisation of their 0-12 months aged children. 77% mothers reported that weight was measured in their infants (taken to a VHND session). It was found that only in case of 48% of the infants, weights were plotted in growth chart of Mother and Child Protection (MCP) Card. Receipt of Iron folic acid (IFA) tablets and contraceptives by beneficiaries was less at 31% and 27% respectively. Counselling for family planning was availed by only 25% beneficiaries. Only 44% beneficiaries attended the Nutrition Health Education and Demonstration (NHED) sessions as shown in **Figure 1** and **Table 4**.

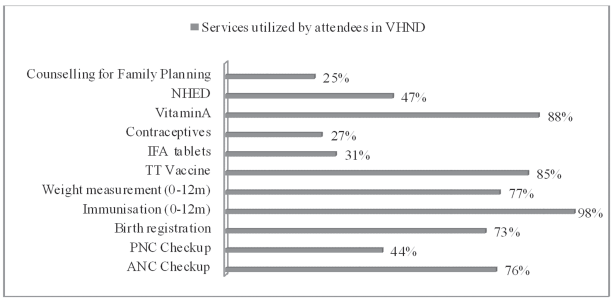


Figure 1 Bar Diagram showing utilization of different VHND services by attendees

Table 4 Service utilization in VHND by attendees* (n=283)

Services utilized	Frequency	Percentage (%)
Antenatal Check-up	215	76
Post natal Check-up	124	44
Birth registration	206	73
Immunisation (0-12 months)	277	98
Weight of infant measured	218	77
Weight of infant plotted in growth chart of MCP card	136	48
Received contraceptives	76	27
Received TT	241	85
Received IFA	87	31
Vitamin A supplementation	250	88
Counselling for Family Planning	70	25
Nutrition, Health Education and Demonstration	134	47

**Multiple responses were cited*

DISCUSSION

VHND can be an effective platform for provision of comprehensive primary care to the beneficiaries at their doorstep if organised with full involvement from the community. Comprehensive primary health care would reduce morbidity and mortality greatly at much lower costs to the system and the individual than any other approach, and would significantly reduce the need for secondary and tertiary care.[13]

In the present study, 86% of the beneficiaries were found to be aware about services being delivered in VHND, (majority were informed by the ASHA and/or the ANM). 73% of the beneficiaries ever attended a session. Of the mothers who didn't attend, 32% responded that they didn't have prior information about observation of the day. The above finding is a matter of concern as it reflects deficiency in the part of the concerned health workers to convey the message about organising the day in their village. 14% of the beneficiaries were unaware about VHND which indicate inadequacy of Information, Education and Communication (IEC) activities by frontline health workers. Similar findings were observed in VHND assessment conducted in six districts of Orissa in 2011.[2]

Presence of all the three frontline health workers (ASHA, ANM and AWW) is critical for provision of the intended package of services in VHND. In the current study, only 77% of the mothers reported the presence of all the three health workers in the last session they attended. PRI members have to ensure that members of the VHSNC are available to support the sessions, also they have to ensure a convenient approach to the AWC for participation in the VHND by one and all.[3] However, only 32% attendees reported the presence of PRI and SHG members and school teachers from the community which indicate inadequate community participation in the sessions.

Present study found that utilization of antenatal care in the beneficiaries was comparatively better than postnatal care with 76% of the attendees availing full ANC check-up while only 44% availed PNC check-up. Counselling for family planning was availed by only 25% of the attendees. This gap reveals a lack of focus on the part of the service providers to motivate the beneficiaries for uptake of PNC and related counselling services.

The study further revealed that 77% of the infants taken to VHND were reportedly weighed; however on examination of the MCP Card only in 48% of them, the weights were plotted in growth chart. Children aged 0-3 years should be the main focus at the monthly VHND meetings since children aged 3-6 years are provided services on daily basis at the AWC. The study finding reflects the absence of growth monitoring and analysis of this vulnerable group. Also, considering the fact that malnutrition is substantially high in rural areas as found by NFHS-3 in India, this is a matter of serious concern.

Coverage of beneficiaries was good for immunisation services as 85% of the mothers' availed TT immunisation and 98% availed immunisation of their 0-12 months aged children. Receipt of Iron folic acid(IFA) tablets and contraceptives by beneficiaries was less at 31% and 27% respectively. Counselling for family planning was availed by only 25% beneficiaries in a session. The above findings are in concordance with that of the VHND assessment conducted in Lahowal block of Dibrugarh district.[14] The VHND monitoring in Assam (in April 2013) under NRHM however found that IFA tablets were distributed to the beneficiaries in 96% of the sessions covered in rural areas of Kamrup. They also found that contraceptives were available on site in 94% of the sessions.[15]

Nutrition Health Education and Demonstration(NHED) sessions are a crucial component of VHND. They can help to have direct interaction with the beneficiaries to promote improvement in knowledge and health behaviour while clarifying myths and misconceptions on health and nutrition issues.[2] Many topics can be discussed in VHND with active participation from PRI members and school teachers like: balanced diet for pregnant and lactating women, breastfeeding, complementary feeding and child feeding practices during and after illness.[3] In our study, out of the total 283 VHND attendees, less than half or only 47% reported attending the NHED sessions after obtaining their individual services. Similar finding was reported in other studies.[2, 9] Major reasons of non-attendance elicited from the respondents were: 'inconvenient timing of these sessions' (towards the end of VHND in the afternoon) and 'didn't feel necessary'. A section of the attendees reported that no such education sessions were being held. It implies that NHED sessions were not considered essential by beneficiaries as well as service providers. This gap in service delivery and utilization demands attention.

CONCLUSION

The present study leads to the conclusion that the complete packages of services in VHND were not utilized to the optimal extent by beneficiary mothers in rural Kamrup. Presence of all the three frontline health workers in any session was reportedly found lacking. Gaps in utilization of services in beneficiaries were mainly found in relation to postnatal care, growth monitoring, counselling for family planning and nutrition and health education. Participation of community members in VHNDs was reportedly found inadequate. Greater community involvement is required to generate demand for essential services like growth monitoring and nutrition and health education. Monitoring and supervision need to be regularized for effective organisation of VHND. Skill building training of the frontline health workers with emphasis on quality of care in service delivery can be useful to optimize the utilization of the available services in VHND.

Ethical Clearance: Obtained from the Institutional Ethics Committee.

Acknowledgement: The authors gratefully acknowledge the participants for their co-operation in the study.

Source of funding: Nil

Conflict of Interest: No conflict of interest associated with this work.

Contribution of Authors: We declare that this work was done by the authors named in this article and all liabilities pertaining to the content of the article will be borne by the authors. KB[1]: Study Concept and Design, Literature search, Pretesting, Design of schedule, Data collection, Analysis, Interpretation, Manuscript writing. RB[2] and AMS[3]: Study Concept and Design, Design of schedule, Manuscript editing and Review.

REFERENCES

1. Vistaar Project. Improving the Coverage and Quality of Village Health and Nutrition Days: Technical brief. 2012 Oct [cited 2012 Oct 20];Available from: URL:http://www.intrahealth.org/.../improving-the-coverage-and-quality-of-village-health.../

2. Orissa technical and management support team. VHND Assessment was conducted in six districts, Quality Indicators developed and discussed with Department of Health and Family Welfare and Department of Women and Child Development. 2011 Jul [cited 2011 Jul 23]; Available from: URL:http://www.nrhmorissa.gov.in/.../VHND%20Assessment%20Conducted%20.../

3. Indian Ministry of Health and Family Welfare. Guidelines for Monthly Village Health and Nutrition Day: AWWs/ ASHAs/ANMs/PRIs. New Delhi. 2007 [cited 2007 Feb 21]; Available from: URL:http://www.medbox.org/monthly-village-health-nutrition-day/download.pdf

4. National Rural Health Mission. Revised Guidelines for Conducting Village Health and Nutrition Day: Assam. 2009 Jul [cited 2009 Jul 20]; Available from: URL:http:/ /www.nrhmassam.in/guidelines.php

5. World Health Organization, United Nations Children's Emergency Fund, the World Bank and the United Nations Population Division. Trendsin maternal mortality: 1990-2013. Available from: URL:http://www.apps.who.int/ bitstream/10665/112682/2/978924150722_eng.pdf

6. Indian Ministry of Statistics and Programme Implementation. Millennium Development Goals-India Country Report 2015. New Delhi. 2015 Feb [cited 2015 Feb26]; Available from: URL:http://www.in.undp.org/.../ india/.../mdg/millennium-development-goals—india/

7. Indian Ministry of Home Affairs. Sample Registration System Bulletin: Estimates of Birth Rate, Death rate, Natural growth rate and Infant Mortality rate, 2013. Office of the Registrar General, New Delhi. 2014 Sept [cited 2014 Sept 20]; Available from: URL:http:// www.censusindia.gov.in/…/SRS%20Bulletin%20-September%2/

8. Costello A, Osrin D, Manandhar D. Reducing maternal and neonatal mortality in the poorest communities. BMJ2004; 329(7475):1166-68. [Online]. 2004 Nov [cited 2004 Nov11]; Available from: URL:http://dx.doi.org/ 10.1136/bmj.329.7475.1166

9. Tarar M. Community participation in Health care: The Turkish Case. Soc Sci Med 1996; 42(11):1493-1500

10. Black RL, Allen Z, Bhutta L, Caulfield M, de Onis M, Ezzati C, et al. Maternal and child undernutrition: global and regional exposures and health Consequences. Lancet 2008;371(9608):243-60

11. Indian Ministry of Health and Family Welfare. National Family Health Survey (NFHS-3), 2005-06 Report. International Institute of Population Sciences, Mumbai. 2007 Sept; Available from: URL:http://www.rchiips.org/ nfhs/NFHS.../VOL.../Report..%20Volume-II(1632k).pd

12. Sachdev H.P.S, Chowdhury P. Nutrition in Children: Developing Country Concerns. New Delhi: B.I. Publications; 2004.p.444-60

13. Indian Ministry of Health and Family Welfare. Draft National Health Policy 2015. New Delhi. 2015 Jan [cited 2015 Jan1]; Available from: URL:http://www.mohfw.nic.in/ www.mohfw.nic.in/showfile.php?lid=3014

14. Mahanta TG, Baruah M, Mahanta BN, Gogoi P, Baruah J, Gupte S. Process evaluation of Village Health and Nutrition Day observation (VHND) in a block of Dibrugarh District of Assam. J Clinical Epidemiology and Global Health. 2014 Aug [cited 2014 Aug 4]; Available from: URL:http://www.dx.doi.org/10.1016/ j.cegh.2014.07.001

15. National Rural Health Mission.VHND monitoring in the month of April 2013. Assam. 2013 Sept [cited 2013 Sept 14]; Available from: URL:http://www.nrhmassam.in/pdf/ .../Report_on_VHND_Monitoring_Assam_2013

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Cerebellar Hemangioma: Advanced Imaging

Phukan Pranjal[1], Handique Akash[2], Kakati Arindom[3], Khonglarh Yookarin[4], Sarma Kalyan[5]

***Received** on February 2/2015; **accepted** (revised) on April 19/2015; **approved** by author on May 11/2015*

ABSTRACT

The hemangioblastoma is a rare benign (WHO grade I) vascular tumour. It may difficult to differentiate from other posterior fossa tumour. The conventional MRI showed cystic lesion with markedly enhancing mural nodule. There is paucity of literature of advanced MRI imaging of cerebellar hemangioblastoma. We report a case of cerebellar hemangioma with advanced MRI imaging and reviewing the literature

***Keywords:** Cerebellar hemangioblastoma, Von Hippel-Lindau disease, Cyst with mural nodule*

Address for correspondence and reprint:
[1]Associate Professor
Email: pphukan10@gmail.com
Mobile: 9856928350.
[2]Associate Professor (Corresponding Author)
Email: drahandique@gmail.com
Mobile: 9436114332.
[3]Assistant Professor
Email: arindom.kakati@gmail.com
Mobile: 8014485569.
[4]Associate Professor.
Email: yookarink@gmail.com
Mobile: 9436336490.
[5]Resident, Department of Radiology and Imaging, NEIGRIHMS, Shillong, India- 793018

INTRODUCTION

The hemangioblastoma is a rare benign (WHO grade I) vascular tumour. It may be difficult to differentiate from other posterior fossa tumours. The conventional MRI showed cystic lesion with markedly enhancing mural nodule. There is paucity of literature of advanced MRI imaging of cerebellar hemangioblastoma. We report a case of cerebellar hemangioma with advanced MRI imaging and reviewing the literature.

CASE HISTORY

A 20 years old male presented with progressive holocranial headache for 2 months associated with vomiting and gait disturbances for 2 weeks. The boy was in severe distress due to headache. Fundal examination showed papilledema. Motor and sensory examinations were normal. Evaluation of the cerebellar system revealed truncal ataxia.

MRI Findings:

On MR, a well defined rounded, sharply defined cystic lesion was arising from the right cerebellar tonsil that showed prolongation of both T1 and T2 relaxation times with multiple flow voids. A solid nodule was seen within the wall of the cyst which showed strong enhancement on contrast study, whereas the cyst wall does not. The nodule abuts the cerebellar surface. On MR perfusion, the mural nodule showed increased rCBV (not shown). Mean perfusion curve showed rapid fall followed by rapid upstroke not reaching the base line. On MR spectroscopy, there was decreased NAA with lipid peak.

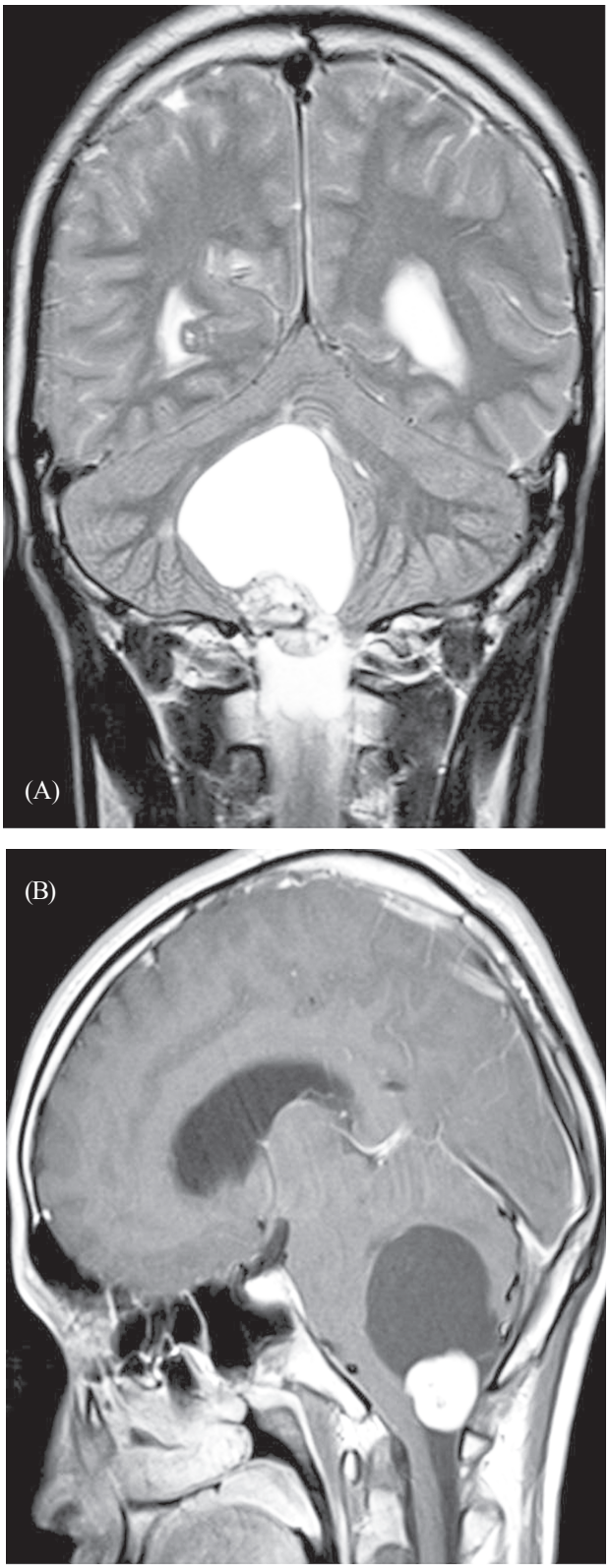


Figure 1 On MRT2WI, coronal images and contrast enhance images (A and B) showed a well-defined, sharply marginated cystic lesion arising from the right cerebellar tonsil with multiple flow voids. A strongly enhancing nodule was seen within the wall of the cyst abuts the cerebellar surface. (C) Mean perfusion curve showed rapid fall followed by rapid upstroke not reaching the base line. (D) On MRS, there was decreased NAA with lipid peak.

Cerebral Angiography

Digital angiography showed tangles of tightly packed vessels opacified in the early arterial phase with feeding artery from right AICA with draining vein through the superficial cerebellar vein to transverse sinus.

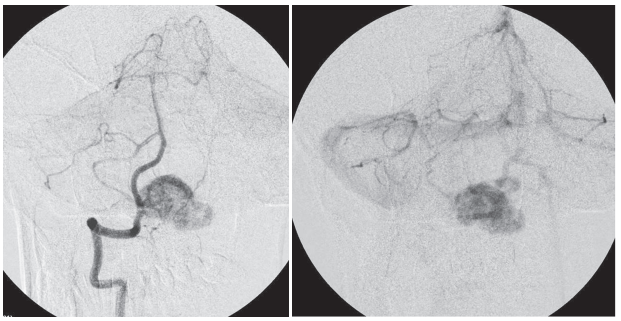


Figure 2 Digital angiography (A and B) showed tangles of tightly packed vessels opacified in the early arterial phase with feeding artery from right AICA with draining vein through superficial cerebellar vein to transverse sinus

Surgery

The patient underwent a sub occipital craniotomy and excision of the lesion. Per operatively there was a cystic mass involving the right cerebellar tonsil, with a mulberry coloured smooth walled nodule, it was highly vascular with a very prominent draining vein.

Histopathology

Histopathological section showed stromal vacuolated cells with interspersed blood vessels.

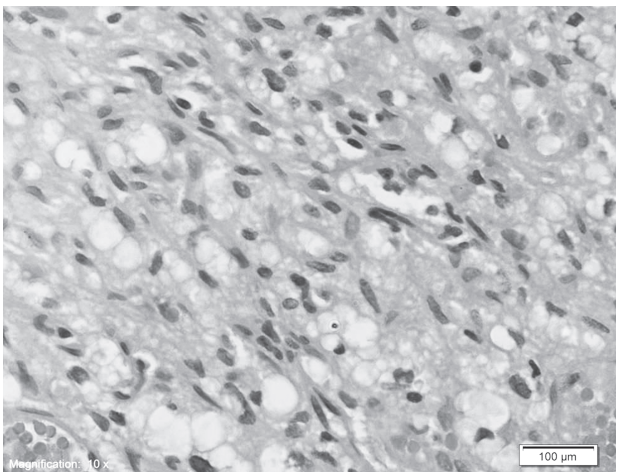


Figure 3 Histopathological section (1E) showing stromal vacuolated cells with interspersed blood vessels (H and E 40x:)

DISCUSSION

The hemangioblastoma is a benign (WHO grade I) vascular tumour. It accounts for 1%–2.5% of all intracranial tumours in the population.[1] Ninety-five percent of hemangioblastomas located in the posterior fossa of which 70 to 80% are located in the cerebellar hemispheres. Hemangioblastomas are linked to von Hippel-Lindau (VHL) disease, although isolated cerebellar hemangioblastoma is the commonest presentation.[2]

Hemangioblastomas are originating from the cerebellar surface. Therefore, they are constantly connected to a pial surface. [3] Macroscopically, the tumour has a bright yellow colour as a result of its lipid content.[1,4] The histological features are consisting components of capillary network lined by hyperplastic endothelial cells and the stromal cells, which have pleomorphic or lobulated nuclei and lipid containing abundant, pale cytoplasms.[1,4] Mitoses are usually inapparent.[1, 4]

The expression of highly angiogenic growth factors and their receptors might be responsible for high vascularity of the tumor. [5]

CEMR images are useful to detect additional small hemangioblastomas, which are often not visible by baseline MRI. Because of the significant likelihood of multiple lesions, the whole neuraxis should be imaged. On MRI, cerebellar hemangioblastoma typically appear as large, rounded, sharply marginated cystic lesions that show prolongation of both T1 and T2 relaxation times.[6] Variable intracystic signal intensity may occur, depending on protein or hematic content. A solid nodule may be seen within the wall of the cyst.[6] After gadolinium administration, the mural nodule enhances strongly, whereas the cyst wall most commonly does not enhance unless lined by neoplasm.[7] The nodule consistently abuts the cerebellar surface and is usually smaller than the cyst unlike cystic astrocytoma, which tends to have a larger nodule. A diagnostic pitfall is the hemangioblastoma with a small central lucency, which can be interpreted as a necrotic metastasis. In this case, the ring like enhancement of the necrotic nodule is thick and irregular.[8]

Large feeding and draining vessels in the periphery and within the solid component appear as tubular flow voids on T2-weighted images and MRA. However, digital angiography better shows tangles of tightly packed, wide

vessels, opacified in the early arterial phase.[6] Sometimes, the typical finding of a "cherry attached to its stalk" may be recognized. Angiography is needed to identify the vascular pedicle before surgery, and preoperative embolization may be useful in order to reduce the risk of intraoperative bleeding.[9,10] Angiography also is useful for differentiating between pilocytic astrocytoma and hemangioblastoma, because only the latter shows a typical blush**.**

MR Spectroscopy

Proton MRS reveals a high mobile lipids (Lip) peak between 0.9 and 1.4 ppm, which was compatible with histologically proven lipids in the tumor. The creatine/phosphocreatine peak is low. Choline-containing compounds may increase. The N-acetylaspartate peak is absent, which indicate nonneurogenic origin of the tumor. An oxaloacetate at 2.37 ppm is a characteristic feature of hemangioblastoma. These unique results of proton MRS can play an important role in the differential diagnosis of intracranial hemangioblastoma.[11, 12] In our case we did not find oxalate peak. From our point of view, the signal of 2.37 ppm in their reported case might have been due to a noise level, not oxaloacetate. The high lipid peak is also seen in other tumors, especially high-grade tumors such as high-grade gliomas, metastatic brain tumors, and anaplastic meningiomas due to presence of intratumoural necrosis. The high lipid peak on proton MRS without the necrotic component on MRI can be a characteristic finding of hemangioblastoma.

MR Perfusion

The rCBV map is also useful in differentiating cystic astrocytoma from hemangioblastoma. At conventional MR imaging, both cerebellar hemangioblastomas and astrocytomas often appear as small, enhancing nodules within a well-circumscribed, thin-walled cyst, as in our cases. Despite some differential features such as an intratumoral signal void, differentiation by conventional MR imaging alone is difficult, especially where tumors are smaller than 1cm.[13] Quantitative analysis indicated that the rCBV ratio of hemangioblastomas was significantly higher than that of cerebellar astrocytomas, and it was also found that compared with that of gray matter, the signal intensity of hemangioblastomas was much higher, while that of cystic astrocytomas was slightly higher.[14] These tumours show arterio venous shunting on angiography [15] and are usually lesions with high rCBV. They can show a rapid steep fall in signal intensity with rapid return to baseline; and a rapid steep fall in signal intensity with rapid return to baseline, followed immediately by a second, smaller dip. It has also been shown that, depending on rCBV values, hemangioblastoma and pilocytic astrocytoma can be differentiated with confidence.[16] In our case there is rapid fall of signal intensity with rapid return towards baseline but not reaching the base line. The 1st halves of the curve represent high leakiness of the blood brain barrier and 2nd half of the curve represent high arterio venous shunting of the tumor bed.

CONCLUSION

Advanced MR images are useful in differentiating hemangioblastoma from other lesion and detect additional small hemangioblastomas. The high lipid peak without NAA or Lactate peaks on proton MRS and the absence of a necrotic component on MRI may be the characteristic radiological findings of hemangioblastoma. These unique results of proton MRS can play an important role in the differential diagnosis of intracranial hemangioblastoma. Hemangioblastoma demonstrate relatively predictable patterns of mean perfusion curve on T2* DSC PMRI. Along with perfusion maps and conventional cross-sectional imaging, can help in the characterization of intracranial tumors.

REFERENCE

1. Parici EJ, Mena H. Nonglial Tumours. In: Nelson JS, Parisi JE, Schochet SJr, editors. Principles and Practice of Neuropathology. St. Louis: Mosby, 1993; 203-66.
2. Conway JE, Chou D, Clatterbuck RE, et al. Hemangioblastomas of the central nervous system in von Hippel-Lindau syndrome and sporadic disease. Neurosurgery. Jan 2001;48(1):55-62; discussion 62-3
3. Sutton LN, Laisner T, Hunter J, Rorke LB, Sanford RA. Thirteen- year-old female with hemangioblastoma . Pediatr Neurosurg 1997; 27:50–55.
4. Namiki H, Hardman MJ, Yang H. The Central Nervous System. In: Silverberg SG, Delellis RA, Frable WJ, editors. Principles and Practice ofSurgical Pathology and Cytopathology. 3rd ed. Churchill and Livingstone, 1997; 2905-3036.
5. Vaquero J, Zurita M, Coca S. Expression of vascular endothelial growth factor in cerebellar hemangioblastomas

does not correlate with tumor angiogenesis. Cancer Lett 1998;132:213-7

6. Barkovich AJ. Pediatric Neuroimaging, 3nd edn. Philadelphia: Lippincott Williams and Wilkins, 2000.
7. Andreula CF, Recchia-Luciani ANM. Malatia di von Hippel-Lindau. In: Tortori-Donati P, Taccone A, Longo M (eds). Malformazioni cranio-encefaliche. Neuroradiologia. Torino: Minerva Medica, 1996:399–403.
8. Ganti SR, Silver AJ, Hilal SK, et al. Computed tomography of cerebellar hemangioblastomas. *J Comput Assist Tomogr* Oct 1982;6(5):912-9**.**
9. Huson SM, Hughes RAC (eds.) The Neurofibromatoses. A pathogenetic and clinical overview. London: Chapman and Hall, 1994:160–232.
10. Bilaniuk LT, Molloy PT, Zimmerman RA, Phillips PC, Vaughan SN, Liu GT, Sutton LN, Needle M. Neurofibromatosis type 1: brain stem tumours. Neuroradiology 1997; 39:642–653.
11. Tomonori Isobe · Tetsuya Yamamoto Hiroyoshi Akutsu, Proton magnetic resonance spectroscopy findings of hemangioblastoma, Jpn J Radiol 2010;28:318–321**.**
12. Vatsal DK, Husain M, Husain N, Chawla S, Roy R, Gupta RK. Cerebellar hemangioblastoma simulating arachnoid cyst on imaging and surgery. Neurosurg Rev 2002;25:107–9.
13. Lee SR, Sanches J, Mark AS, Dillon WP, Norman D, Newton TH. Posterior fossa hemangioblastomas: MR imaging. Radiology1989;171:463-468**.**
14. Aronen HJ, Gazit IE, Louis DN, et al. Cerebral blood volume maps of gliomas: comparison with tumor grade and histologic findings. Radiology 1994;191:41-51 7.
15. Masters L.T., Pryor J.C., Nelson P.K. Angiographic findings associated with intra-axial intracranial tumors*Neuroimaging Clin N Am* 1996;6:739-749.
16. Bing F., Kremer S., Lamalle L., Chabardes S., Ashraf A., Pasquier B., and al. Value of perfusion MRI in the study of pilocytic astrocytoma and hemangioblastoma: preliminary findings *J Neuroradiol* 2009;36 (2):82-87.

SUBMISSION OF MANUSCRIPT

1. All manuscripts must be in English and should be submitted through: **hrmlpractice2014@gmail.com**
2. The full name as well as the e-mail addresses and telephone numbers of all authors must be provided
3. A copy of the manuscript in MS Word format may also be submitted via e-mail
4. Illustrations (figures) should be in computer format. Images for any manuscript should not exceed 200 kilobytes and should also be sent as an attachment of mail (jpg format). Maximum figure five.
5. Authors may submit the names, affiliations and addresses (including e-mail) of expert reviewers or those they do not want to review their papers.
6. **Paper size**: A4 with 1.25 cm margin on all sides
7. **Paragraphing**: All text must be in **single line** space all through. Also use single line spaces to indicate paragraphs. Nothing else.
8. Font: "Times" all through the text of article. **Title**: 22 points font size.
9. **Author's Names**: 12 points font size and must be in the following order: full surname, first name and lastly middle name. *Author's affiliation* and correspondence telephone and email: 9 points font size.
10. **Tables and Figures**: 9 points font size all through. Data in Tables MUST be provided in the cells inside Table. The use of TABS, spacing between lines using line should be avoided. Authors should produce figures that will not exceed the size of half column of a page.
11. **Body of manuscript**: Use 11 points (bold) for major headers and 10 points (bold) for all sub-headings and other texts.
12. **Material and Methods**: Use 11 points for header and 10 points for all sub-headings and other texts.
13. **Authors Contribution**: Use 10 points (bold) for header and 10 points for other texts
14. **Acknowledgements**: Use 10 points (bold) for header and 10 points for other texts

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Uterine Choriocarcinoma: A Diagnostic Challenge (A Rare Case)

KJ Jeevitha[1], P Devaki[2], Rathna Ramamurthy[3], Raja Rajeshwari S[4]

***Received** on March 05/2015; **accepted** (revised) on Marh 11/2015; **approved** by author on May 11/2015*

ABSTRACT

Choriocarcinoma is a rare form of cancer, which commonly occurs in women of reproductive age, rarely in postmenopausal women and in women under 20 years of age. This case reports a 31-year-old P_3L_3 woman, who was presented to the emergency room with complaints of profuse bleeding per vaginum. Although the initial diagnostic and radiographic findings favored the possibility of uterine arterio-venous (AV) malformation and treatment was planned accordingly, it was the final histopathological findings that confirmed the entity as Choriocarcinoma of the uterus.

The purpose of reporting this case is to highlight the need for differential diagnoses to be considered in a limited resource emergency situation. The need for accurate diagnosis is of paramount importance, because definitive treatment is largely based on it, and it is possible to achieve a 100% cure rate in low risk patients; 80-85% in high-risk patients with Choriocarcinoma of uterus.

***Keywords:** Uterine Choriocarcinoma, Arteriovenous malformation, beta HCG*

Address for correspondence and reprint:
[1]Dr. Jeevitha K J MBBS DNB (Obstetrics and Gynaecology), Senior Resident, Diploma in Laparoscopic Surgery (**Corresponding Author**)
Phone: 0452 – 2510000 Extension: 126
Mobile: +91 99402 92762
Email: jeevithakj@yahoo.co.in
[2]Assistant Professor, [3]Associate Professor, [4]Head
Department of Obstetrics and Gynaecology
Velammal Medical College Hospital and Research Institute

INTRODUCTION

Choriocarcinoma is a highly malignant tumor of trophoblastic origin. Choriocarcinoma is a biphasic proliferation of trophoblast and syncytiotrophoblast, with morphology similar to primitive trophoblast of the placental previllous stage; chorial villi are absent in this tumor type. Choriocarcinoma shows variable clinical signs and symptoms, the most frequent being abnormal uterine bleedings.[1] Gestational Choriocarcinoma is a rare complication of pregnancy with incidence of 1 in 20,000 to 1 in 45,000 in western countries, and usually arising from a prior molar pregnancy or rarely on non-molar gestation within 1 year of antecedent pregnancy.[2]

The purpose of this case report is to illustrate the difficulty in diagnosing a case Choriocarcinoma, especially when adjuvant modalities can be non-specific and misleading. Definitive diagnosis is always established by histopathological study.

CASE HISTORY

A 31 year old, P_3L_3 woman delivered by elective repeates cesarean section 36 days back presented to the emergency department with history of irregular episodes of bleeding per vaginum (p/v) since delivery and is increased for past 4 days. She also complained of mild supra-pubic pain, which was cramping in nature. Prior to presentation to our centre, she had 2 units of packed cell transfusion. On examination her pulse rate was 114 beats per min, and her blood pressure was 90/60 mm Hg. Per abdomen examination showed uterus of 24 weeks. Following vaginal examination she had a sudden gush of bleeding. There

was no evidence of trauma, sub urethral or cervical lesion. She was advised hospitalization and was haemodynamically stabilized with intravenous fluids and was transfused with one unit of packed cell. Her blood grouping was O positive and hemoglobin value was 8.3 gm/dl. All other lab values were within normal parameters. An ultrasound abdomen study demonstrated increased vascularity of the uterus. MRI images presented with brilliantly enhancing serpigenous nidus of vessels at fundus and anterior wall of uterus with faint calcification suggestive of retained products of conception (placental remnants) and arteriovenous malformation. Uterine vessels were grossly dilated and tortuous, while parametrial vessels more prominent on the right than left (**Figure 1**). Beta HCG value was 8,000 IU/ L. Uterine bleeding was massive and persistent.

Figure 1 Brilliantly enhancing serpigenous nidus of vessels at fundus and anterior wall of uterus with faint calcification suggestive of retained products of conception (placental remnants) and arteriovenous malformation

Following multidisciplinary discussion with interventional radiologist and vascular surgeon; the possibility of AV malformation with persistent bleeding, hysterectomy was decided as the treatment of choice. Intraoperative findings showed uterus of 18 weeks with grossly dilated and tortuous vessels that were consistent with the appearance of an AV malformation. Hysterectomy was completed and the post-operative period was uneventful. The cut section of uterus showed a growth of size 4 x 3 cms occupying the uterine cavity (**Figure 2**) and the specimen was sent for histopathological evaluation (HPE).

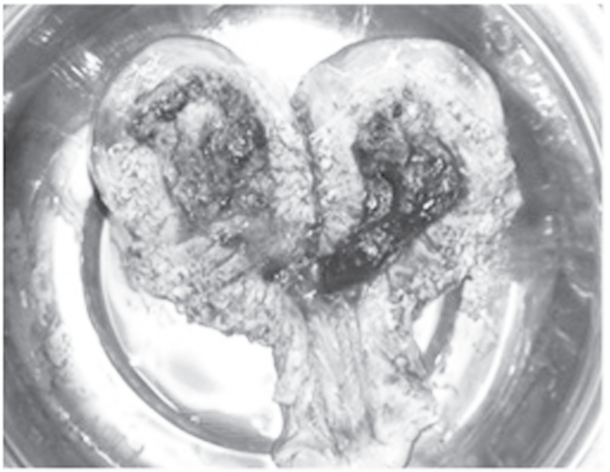


Figure 2 Cut section of uterus showing a growth of size 4 x 3 cms occupying the uterine cavity

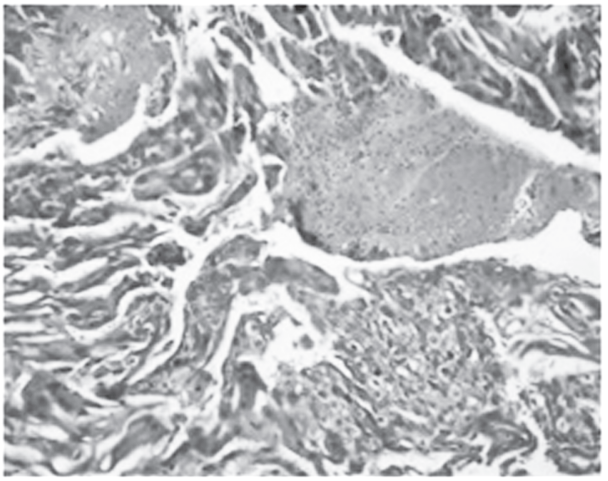


Figure 3 HPE demonstrating biphasic growth pattern with mononuclear trophoblastic cells residing adjacent to syncitiotrophoblastic cells. Nuclear pleomorphism and hyperchromasia are striking

Following HPE (**Figure 3**), a definitive diagnosis of choriocarcinoma of uterus was made and the TNM staging was: $pT_1N_0M_0$. Immunohistochemistry (IHC) with Ki67 was 70% positive for choriocarcinoma. Subsequent investigations for distant metastasis were negative and concurrent treatment with methotrexate and folinic acid was started. Repeat beta HCG was 1000 IU/L after 1 week. Patient was given 3 courses of chemotherapy and beta HCG was followed up. Following three cycles of chemotherapy her beta HCG value was less than 2 IU/L.

DISCUSSION

Choriocarcinoma is a rare condition and can be divided into gestational and non-gestational types. Gestational choriocarcinoma mostly occurs in woman of reproductive age group, usually within one year following molar or non-molar pregnancy. Non-gestational is common in postmenopausal women. Gestational choriocarcinoma may follow after any type of pregnancy as in hydatiform mole, normal term pregnancy, an abortion or even after an ectopic pregnancy.

Choriocarcinoma should be suspected when there is persistent or irregular uterine bleeding following molar pregnancy, abortion or normal delivery. The diagnosis of choriocarcinoma needs a high index of suspicion and is often difficult in resource-limited sittings. Rapid growth and haemorrhage makes the tumor a gynecological emergency.[2]

Serum Beta HCG is an important investigation in diagnosis and monitoring the prognosis of the disease. It is a sensitive and reliable indicator of the condition. IA McNeish et al have proposed a new system of scoring: *Charing Cross Scoring system* (**Table 1**), which further reduces the risk of unwanted exposure of chemotherapy.[4,5] According to this system the use of methotrexate (MTX) and folinic acid (FA) regimen is recommended for low risk (0-8) and EMACO (Etoposide, Methotrexate, Actinomycin D, Cyclophosphomide and Oncovin) for high risk (>8). The treatment regime for the low risk group is with MTX 50 mg intramuscular on day 1, 3, 5, 7 with FA orally on day 2, 4, 6, 8 is repeated every 2 weeks and for high risk group infusion with **EMA-CO regimen** is followed (**Table 2**).[6]

Table 1 Charing Cross Scoring System

Variable	0	1	2	6
Age (years)	<39	>39		
Antecedent pregnancy (AP)	Mole	Abortion/ unknown	Term	
Interval between AP to treatment (months) hCG (IU l^{-1})	<4	4–6	7–12	>12
	10^3–10^4	<10^3	10^4–10^5	>10^5
ABO blood group (female x male)		A x O	B x O or O	
		O x A	AB x A or O	
		O or A x unknown		
Number of metastases		1–4	4–8	>8
Site of metastases	Lungs, vagina	Spleen, kidneys	Gastroin-testinal tract, liver	Brain
Largest tumour mass	<3 cm	3–5 cm	>5 cm	Two
Previous chemotherapy			Single drug	or more drugs

hCG = human chorionic gonadotrophin; Charing Cross System – low risk: 0-5, intermediate risk: 6-9, high risk: >9. Sheffield modification – low risk: 0-7, high risk: >7

Table 2 EMA-CO Regimen

Course 1 EMA	
Day 1	Actinomycin D 0.5 mg IV stat, Etoposide 100 mg/m^2 in 200 ml normal saline over 30 minutes, Methotrexate 300 mg/m^2 IV 12 hours infusion
Day 2	Actinomycin D 0.5 mg IV stat Etoposide 100 mg/m^2 in 200 ml normal saline over 30 minutes Folinic acid 15 mg per os or IM BD for 4 doses starting 24 hours after the start of Methotrexate
5-day drug-free interval to course 2	
Course 2 CO	
Day 1	Vincristine 1.0 mg/m^2 IV stat (maximum 2.0 mg) Cyclophosphomide 600 mg/m^2 IV infusion over 20 minutes
6-day drug-free interval	

Being a highly malignant tumor, metastasis is common and occurs in lungs, pelvis and vagina. If left untreated choriocarcinoma is likely to transform into malignant trophoblastic disease. Metastasized stage on diagnosis is common in patients with choriocarcinoma, with a rate of 30%. In a few cases choriocarcinoma may spread distantly and some reports mention lung metastasis as a common site while others suggested that it rarely results in pulmonary metastases. Other locations likely to have metastases include brain, liver, kidney and bowel.[7]

Uterine arteriovenous malformations (AVMs) are usually diagnosed in women with unexplained vaginal bleeding and is frequently life threatening.[8] Choriocarcinoma should be considered as an important differential diagnosis in cases of uterine AV malformation.[9] In the reported case, in view of P_3L_3 pregnancy, with a Charing Cross score of 3, with torrential uncontrolled bleeding P/V, the patient was managed by hysterectomy followed by three cycles of chemotherapy.[10]

CONCLUSION

Sudden massive vaginal bleeding is the most frequent presentation in an OBG emergency department. The diagnosis of choriocarcinoma/AV malformation should be considered when a patient presents with sudden severe vaginal bleeding following caesarean section or dilatation and curettage. USG and beta HCG should be performed for diagnosis, as both are differential diagnosis for each other.

Consent of the patient: Obtained

Conflict of interest: None

Acknowledgment: The authors wish to acknowledge the help and contribution of Dr. Rajaguru and Dr. Yegu, Department of General Pathology, Velammal Medical College Hospital and Research Institute.

REFERENCES

1. Marcu M, Chefani A, Sajin M: Postmenopausal Choriocarcinoma: a case report: Romanian J of Morphology and Embryology 2005;46:145-148.
2. O'Neill CJ, Houghton F, Clarke J, McCluggage WG: Uterine gestational choriocarcinoma developing after a long latent period in a post-menopausal woman: the value of DNA polymorphism studies: Int J Surg Pathol 2008;16:226-229.
3. Kelechi E, Umezurike CC, Akwuruoha E: Uterine Choriocarcinoma - A gynecological masquerader: Case report and review of literature: Modern Chemotherapy 2013;4:69-72.
4. McNeish IA, Strickland S, Holden L, Rustin GJS, Foskett M, Seckl MJ Newlands ES: Low-risk persistent gestational trophoblastic disease: outcome after initial treatment with low-dose methotrexate and folinic acid from 1992 to 2000:JCO 2002;20:1838-1844.
5. F Khan, J Everard, S Ahmed, R E Coleman, M AitkenB W Hancock: Low-risk persistent gestational trophoblastic disease treated with low-dose methotrexate: efficacy, acute and long-term effect: British J of Cancer 2003;89(2):197–220.
6. Shaw RW, Soutter WP, Stanton SL, Rustin GJS: Trophoblastic diseases: gynecology, 2nd ed. Churchill Livingstone; 1997. p. 605-14.
7. Arslanian A, Pischedd F, Pier Luigi F, Di Marzio P, Alberto Oliaro A, Fraire F and Papotti M: Primary choriocarcinoma of the lung. J of Thoracic and Cardiovascular Surgery 2003;125:193-6.
8. Aragon IC, Aragon I, Urcuyo R, Abbott, Levine D: Arteriovenous Malformation Diagnosed in Pregnancy: J Ultrasound Med 2004;23:1101–1104.
9. Kelly SM, Belli AM, Campbell S: Arteriovenous malformation of the uterus associated with secondary postpartum hemorrhage: Ultrasound ObstetGynecol 2003;21:1-5.
10. Hertz R Bergenstal DM, Lipsett MB, Price EB, Hilbish TF: Chemotherapy of choriocarcinoma and related trophoblastic tumors in women: Annals of Newyork Academy of Sciences 1959;80:262-264.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Spindle Cell Liposarcoma: A Rare Variant of Liposarcoma Arising in Forearm with Ulceration

Kalita Chayanika[1], Kalita Lohit kumar[2], Ali Ahmed[3], Sarma Umesh Chandra[4]

***Received** on March 13/2015; **accepted** (revised) on Marh 28/2015; **approved** by author on May 11/2015*

ABSTRACT

Liposarcoma is the most common soft tissue sarcoma accounting for 20% of all mesenchymal malignancies. Spindle cell liposarcoma is a rare histological variant of liposarcoma. Spindle Cell Liposarcoma presenting with ulceration is a rare entity in the history of literature. We report a case of spindle cell liposarcoma arising from the right forearm presenting with ulceration. A 14-year-old young boy presented with a slow growing ulcer over the right forearm. Histological examination of biopsy showed spindled and stellate shaped cells in a myxoid background and many curved vessels suggesting myxoid and round cell liposarcoma suggesting spindle cell liposarcoma. Based on this, a histological diagnosis of spindle cell liposarcoma was made. Spindle cell liposarcoma is a rare variant of well-differentiated liposarcoma characterized by prominent spindle cell component. In previously reported cases spindle cell liposarcoma was demonstrated in the subcutaneous tissues of limbs, trunk, shoulder girdle, buttock presenting a mass without ulceration. Main differential diagnoses include benign lesions such as spindle cell lipoma, diffuse neurofibroma as well as dermatofibrosarcoma protuberans and other malignancies such as sclerosingliposarcoma, myxofibrosarcoma, malignant peripheral nerve sheath tumor and fibromyxoid sarcoma. Spindle cell Liposarcomas tend to recur locally and may have a potential for metastasis. Wide excision and long term follow up looking for recurrence and metastasis is necessary. To our knowledge, Liposarcoma presenting with ulceration at forearm has not been observed in literature. So, our case is a rare variant of liposarcoma arising at forearm with ulceration.

***Keywords**: Spindle cell Liposarcoma; leg; atypical Lipomatous Tumor; well differentiated Liposarcomas; Spindle cell*

INTRODUCTION

Sarcomas encountered in limbs show wide variety of histo-morphological types and grades. Liposarcoma of the leg represents approximately 1% of sarcoma of limbs. They are a group of malignant neoplasms that affect critical structural units of legs that can result in grave consequences if they are not diagnosed and managed properly. Amongst the group of Well Differentiated Liposarcomas/ Atypical Lipomatous Tumor (WDL/ALT), spindle cell variant (S-WDL/ALT) is rarely documented in literature.[1] WDL/ALT tend to develop in the deep muscles of extremities (75%), retroperitoneum (20%) and other

Address for correspondence and Reprint:
[1]***(Corresponding Author)**, Assistant Professor Department of Dermatology, Gauhati Medical College and Hospital, Guwahati, Assam*
Mobile: 09706669840,
Email: drchayanikaghy@gmail.com
[2]*Assistant Professor, Department of Oncology, Gauhati Medical College and Hospital, Guwahati, Assam*
[3]*Assistant Professor, Department of Pathology, Gauhati Medical College, Guwahati, Assam*
[4]*Vice-Chanchellor, Srimanta Sankaradeva University of Health sciences, Narakasur HillTop, Guwahati Assam*

miscellaneous sites.[2] In this case, the tumor was located in right forearm with ulceration as an unusual condition. This tumor is composed of prominent spindle cell proliferation and varying sized adipocytes and mixed with few lipoblasts set in a fibrous and/or myxoid background. It tends to occur in adults. Here, we report a case of S-WDL/ALT in the right forearm in a 14 year young boy. These tumors do not metastasize hence require less aggressive therapeutic management.[1] Accurate histopathological subtyping is absolutely essential as it impacts treatment strategies and outcome.

CASE HISTORY

A 14 year young male presented with a progressively increasing ulcerated growth over the right forearm. This was noticed three months prior to presentation, which was small initially and gradually, increased to the present size. In this case there was neither any previous history of lipomasn or any remarkable associated family history.

FINDINGS

Local examination showed 8 x 7 cm, non-tender, well - defined, ulcer over the upper part of the right forearm (**Figure 1**).

Figure 1 Spindle-cell Liposarcoma Presenting with Ulceration over Right Forearm

Findings of systemic examination were non-contributory. Routine hematological examination was normal except low hemoglobin and high ESR. Routine biochemistry investigations, viz., Random Blood Sugar, Serum Creatinine, Liver and Kidney function test showed no abnormality. X-ray of chest and right forearm were normal. Ultrasonography of abdomen neither showed hepatosplenomegaly nor adenopathy. Routine examination of urine was normal. On microscopic examination, circumscribed tumor composed of spindle cells arranged in short interlacing fascicles interspersed with single and at places collections of varying sized groups of lipogenic cells were seen (**Figure 2** and **3**).

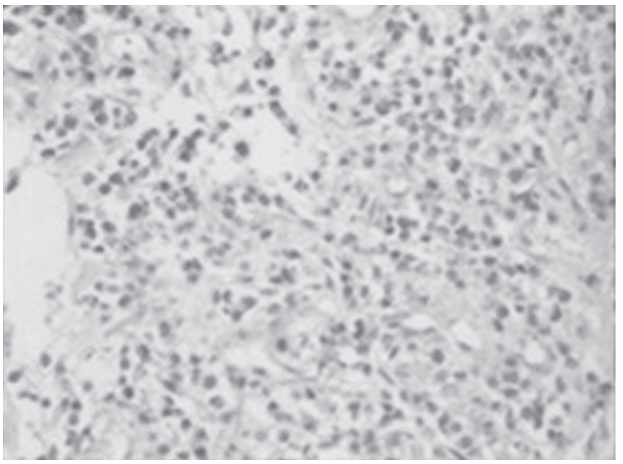


Figure 2 HPE Shows spindled and stellate shaped cells in a myxoid background and many curved vessels suggesting myxoid and round cell liposarcoma (40X)

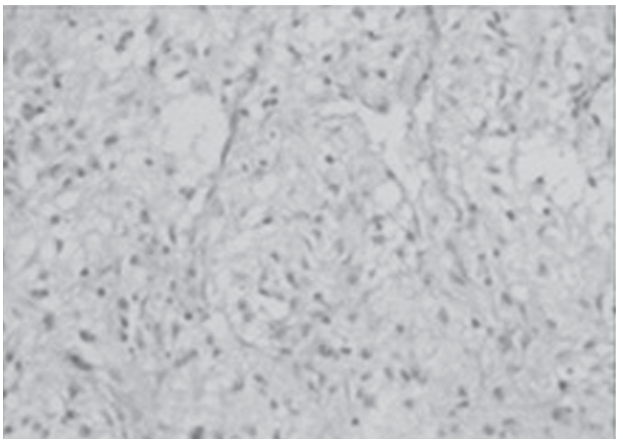


Figure 3 HPE demonstrate cells with uniform round nuclei in a myxoid background (40X)

Stroma showed few atypical spindle cells; thin walled blood vessels, thick and thin fibrous septae with focal myxoid areas. The spindle cells revealed bland oval nuclei and moderate amount of eosinophilic cytoplasm. Few large atypical cells were noted. No areas of necrosis and

hemorrhage noted. On careful search, occasional lipoblasts were seen in the sections taken from the periphery of the tumor. Based on histopathological appearance, spindle cell liposarcoma tumor was considered.

DISCUSSION

Histologically, Liposarcomas are divided into five different subtypes: myxoid, pleomorphic, dedifferentiated, round cell and Atypical Lypomatous Tumors (ALT)/Well differentiated Lyposarcomas (WDL).[3] ALT/WDL is regarded as low grade, non-metastasizing, malignant neoplasms composed primarily of mature adipose tissue. Statistically, approximately 75% develop in the deep soft tissue of the limbs, followed by 20% in the retroperitoneum and a much smaller percentage in the inguinal region.[4] Furthermore, ALT/WDL is further subdivided into the adipocytic (lipoma-like), sclerosing, inflammatory and spindle cell subtypes. Spindle cell- ALT (S-ALT)/WDL is a rarest variant of ALT/WDL.[3] It is a distinct neoplasm which tends to occur in the subcutis of the shoulder region and extremities without presenting with ulceration. Few cases have been described in the head and neck.[2, 5] Histologically, this biphasic tumour is composed of prominent spindle cell proliferation and varying sized adipocytes admixed with few lipoblasts set in a fibrous and/or myxoid background. Lipoblasts show central or peripheral hyperchromatic nucleus which is indented by univacuolated or multivacuolated cytoplasm.[2] As described in the literature, Cytological findings include mixture of adipocytes supported by fibro-vascular septa with hyper chromatic and enlarged nuclei within the fat and fibrous bands with one or two small nucleoli and scattered lipoblasts. Distinction of lipoma and well-differentiated liposarcoma can also be made using imaging techniques.[6] Ultimately histopathology along with immunohistochemistry studies clinches the diagnosis.[7] A few cases of atypical lipomatous tumor/well-differentiated liposarcoma of the gingival has also been recorded in literature.[8] The differential diagnosis of S-ALT/WDL in the limbs includes Spindle Cell Lipoma (SCL) and spindle cell myxoid liposarcoma. Spindle cell lipoma occurs subcutaneously in the posterior neck, upper back and shoulder region. 90% of the lesion is made up of uniform appearing mature adipocytes. Immunohistochemically, lipogenic cells in ALT/WDL show S-100 immunoreactivity and spindle cells show focal presence of CD 34 immunoreactivity.[9] These tumors do not metastasize hence require less aggressive therapeutic management. Accurate histopathological subtyping is absolutely essential at the earliest as it impacts both treatment strategies and outcome.[2] Recently, cytogenetic and molecular studies have highlighted that WDL/ALT are characterized by giant marker and ring chromosomes containing ampliûed sequences of 12q13-15 which is the site for several genes including MDM2, CDK4, GL1, SAS and HMGIC.[1, 2]

However, WDSCL lacks the MDM2 and CDK4 gene ampliûcations and instead show monosomy of chromosome.[1, 2, 9] Another study depicted that unlike epithelial neoplasms, the malignant transformation of a pre-existing mesenchymal tumor has been questioned for a long time.[10] Based on the similarities of clinical, histologic, immunohistochemical, and molecular findings in spindle cell lipoma and well-differentiated spindle cell liposarcoma, it can be speculated that well-differentiated spindle cell liposarcoma represents the atypical/low-grade counterpart of spindle cell lipoma, that the Rb-1 deletion represents an early event in the development of both neoplasms, and that additional genetic changes are necessary for the development of well-differentiated spindle cell liposarcoma. Another hypothesis is the transformation of a pre-existing spindle cell lipoma to a well-differentiated spindle cell liposarcoma, and in some cases of well-differentiated spindle cell liposarcoma, a recent enlargement of a long-standing neoplasm has been reported.[11] A few studies have demonstrated that in striking contrast to epithelial neoplasms, a malignant transformation of a pre-existing benign mesenchymal neoplasm has been questioned for a long time with the exception of the transformation of a neurofibroma to a malignant peripheral nerve sheath tumor in the setting of a neurofibromatosis. However, it has been nicely demonstrated that a biologic continuum of benign, atypical, and malignant lipogenic neoplasms exists[10, 12], and probably some cases of well-differentiated spindle cell liposarcoma arise in a long-standing spindle cell lipoma similarly to cases of malignant peripheral nerve sheath tumors arising in pre-existing neurofibromas; however, this hypothesis has to be substantiated in further studies. Collagenous stroma is prominent. Myxoid areas and prominent, thick walled, arborizing blood vessels may be found in the stroma. Lipoblasts are absent. Myxoid areas can pose diagnostic problems. However, myxoid liposarcoma shows chicken wire vascular pattern which was absent in our case. Instead our case showed singly scattered large atypical nuclei consistent with spindle cell ALT/WDL.[1] In striking contrast to epithelial neoplasms,

a malignant transformation of a pre-existing benign mesenchymal neoplasm has been questioned for a long time. However, it has been shown that a biologic continuum of benign, atypical, and malignant lipogenic neoplasms exists and probably some cases of S-ALT/WDL arise in a long-standing SCL. However, this hypothesis has to be substantiated in further studies.[2] Previous literature shows that liposrcoma is common in elderly male. Our case is a 14 years old male. Spindle cell liposarcoma is a rare variant of liposarcoma. To our knowledge, Sindle Cell Liposarcoma presenting with ulceration over forearm has not been encountered in previous literature.

Acknowledgements: None

Conflict of Interest: None

REFERENCES

1. Mentzel T, Palmedo G, Kuhnen C et al. Well-differentiated spindle cell liposarcoma (‘atypical spindle cell lipomatous tumor’) does not belong to the spectrum of atypical lipomatous tumor but has a close relationship to spindle cell lipoma: clinicopathologic, immunohistochemical, and molecular analysis of six cases. Mod Pathol 2010;23:729-736.
2. Weiss SW, Goldblum JR. Benign lipomatous tumors and Liposarcoma. Enzinger and Weiss’s Soft Tissue Tumors 1998 2nd ed. p. 429-516.
3. Laurino L, Furlanetto A, Orvieto E, Dei Tos AP. Well-differentiated liposarcoma (atypical lipomatous tumors). Semin Diagn Pathol 2001;18:258-262.
4. Weiss SW, Rao VK. Well-differentiated liposarcoma (atypical lipoma) of deep soft tissue of the extremities, retroperitoneum, and miscellaneous sites. A follow-up study of 92 cases with analysis of the incidence of “dedifferentiation”. Am J Surg Pathol 1992;16:1051-1058.
5. Bulus H, Günbey E, Simsek GG, Coskun A, Morkavuk B. Giant atypical lipomatous tumor/well-differentiated liposarcoma of the neck. J Craniofac Surg 2011;22:1122-1124.
6. Kransdorf MJ, Bancroft LW, Peterson JJ, Murphey MD, Foster WC, Temple HT. Imaging of fatty tumors: distinction of lipoma and well-differentiated liposarcoma. Radiology 2002;224:99-104.
7. Collins BT, Gossner G, Martin DS, Boyd JH. Fine needle aspiration biopsy of well-differentiated liposarcoma of the neck in a young female. A case report. Acta Cytol 1999;43:452-456.
8. Kim YB, Leem DH, Baek JA, Ko SO. Atypical lipomatous tumor/well-differentiated liposarcoma of the gingiva: a case report and review of literature. J Oral Maxillofac Surg 2014;72:431-439.
9. Italiano A, Chambonniere ML, Attias R, Chibon F, Coindre JM, Pedeutour F, Monosomy 7 and absence of 12q ampliûcation in two cases of spindle cell liposarcomas. Cancer Genet Cytogenet 2008;15:99-104.
10. Mentzel T. Biological continuum of benign, atypical, and malignant mesenchymal neoplasms-does it exist? J Pathol 2000;190:523–525.
11. Dei Tos AP, Mentzel T, Newman PL et al. Spindle cell liposarcoma, a hitherto unrecognized variant of liposarcoma. Analysis of six cases. Am J SurgPathol 1994;18:913-921.
12. Dei Tos AP, Doglioni C, Piccinin S, *et al.* Coordinated expression and amplification of the MDM2, CDK, and HMGI-C genes in atypical lipomatoustumours. J Pathol 2000;190:531-536.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

A Case Report of Two Unusual Complications Following Intracesarean Insertion of IUD

G Kavitha[1], B Renukadevi [2], RamamoorthyRathna[3], S Rajarajeshwari[4]

***Received** on March 22/2015; **accepted** (revised) on April 03/2015; **approved** by author on May 11/2015*

ABSTRACT

Today almost 153 million women of reproductive age group use the IUD worldwide as method of contraception. Migration of IUD into peritoneal cavity through perforation of uterus, though rare is a serious complication, which can present as a gynecological emergency. Skillful insertion of IUD is important to avoid complications. We report a case of postsurgical hematometra with misplaced IUD following intracesarean insertion, which was managed by laparotomy and retrieval of IUD.

***Keywords:** Misplaced IUD, parametrium, postsurgical hematometra, reversible contraception, post placental insertion.*

Address for correspondence and reprint:
[1]Assistant Professor (**Corresponding Author**)
Phone: 0452 – 2510000 Extension: 126
Mobile: +91 9994719818
Email: kavithag_17@yahoo.com
[2]Assistant Professor, [3]Associate Professor, [4]Head of the Department of Obstetrics and Gynecology
Velammal Medical College Hospital and Research Institute

INTRODUCTION

Intracesarean IUD insertion extends the benefit of long acting reversible contraception to women undergoing operative delivery.[1] Intracesarean IUD has well documented safety reports. Post placental placements of IUD during cesarean delivery are associated with lower expulsion rates than post placental vaginal insertion, without any increasing rates of post-operative complications.[2] Common complications encountered with IUD insertion are a missing thread, dysmenorrhea, heavy menstrual bleeding, pelvic infections, expulsion and perforation of uterus. Probably the most severe complication of IUD is uterine perforation and is common among women with lost IUD's. The most frequent sites of migration are omentum (26.7%), pouch of Douglas (21.5%), large bowel (10.4%), myometrium (7.4%), broad ligament (6.7%), free within the abdomen (5.2%), adhesion to ileal loop serosa (4.4%) or to large bowel serosa (3.7%) and mesentery (3%)[3]. Rare sites are appendix, abdominal wall, ovary and bladder.[3]

Hematometra is the collection of menstrual blood inside the uterine cavity due to an obstructed outflow tract generally due to a congenital cause. But now in the present era, there is a rise in the incidence of postsurgical hematometra following cesarean section, post endometrial ablation procedures and postabortal procedures.

So far, no case of misplaced IUD following intracesarean insertion has been reported. We report a case of misplaced IUD following intracesarean insertion, who also developed postsurgical hematometra. This case report is presented in view of its rarity and also to stress the need for adequate

training of health providers to decrease post-operative complication, thereby decreasing morbidity and mortality.

CASE HISTORY

22 years old P2 L2 with previous two LSCS in lactational amenorrhea presented to our OBG casualty with acute lower abdominal pain since 3 days. She gave history of cyclical abdominal pain for the past 2 months. The second cesarean section was done as an emergency procedure as the patient went into labour and the baby is an MR child. The patient had consulted a gynecologist 6 months back, when she passed the thread of IUD per vagina. USG and CT – Abdomen and Pelvis were done,which revealed migration of IUD into the left parametrium close to left external iliac vessel. Laparoscopy for removal of IUD was attempted, but it could not be traced,so the procedure was abandoned. Two months later she underwent laparotomy at another hospital, but again IUD could not be retrieved even after localizing it with C-arm, as it was deeply embedded in the left parametrium.

Post-operatively patient was comfortable for 2 months and then she developed cyclical abdominal pain with which she came to our hospital. Pelvic examination revealed an enlarged uterus of 16 weeks size with restricted mobility and tenderness in all fornices. USG done at admission revealed hematometra of ~50cc.

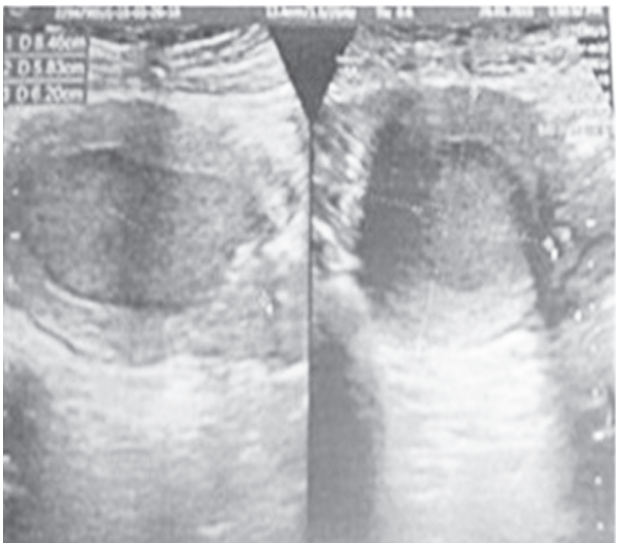


Figure 1 Ultrasound picture showing echogenic fluid in the Endometrial Cavity

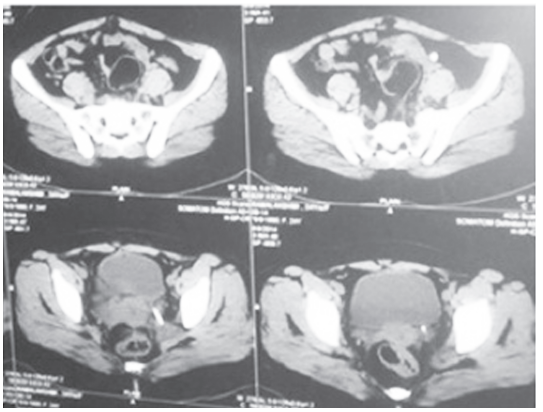


Figure 2 CT Abdomen and Pelvis showing displaced IUD in Left Parametrium

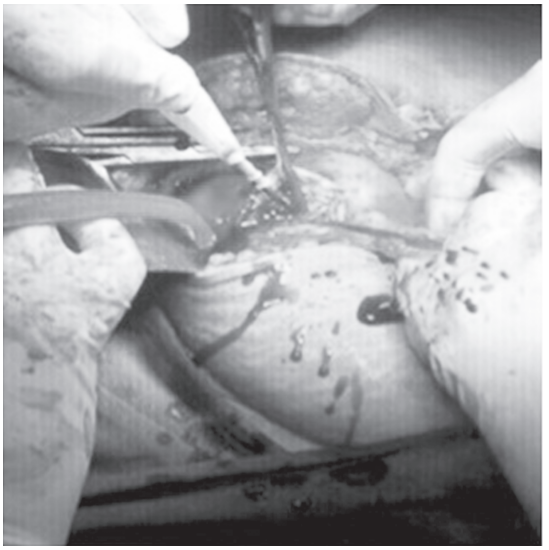


Figure 3 Evacuation of Hematometra through Hysterotomy

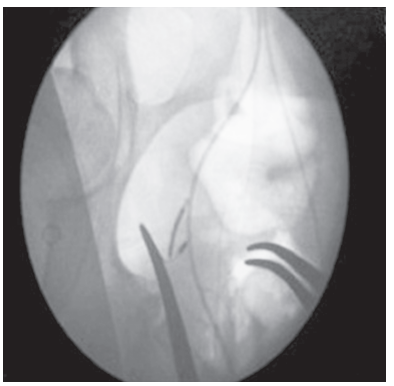


Figure 4 C-arm image localizing the IUD in the left parametrium

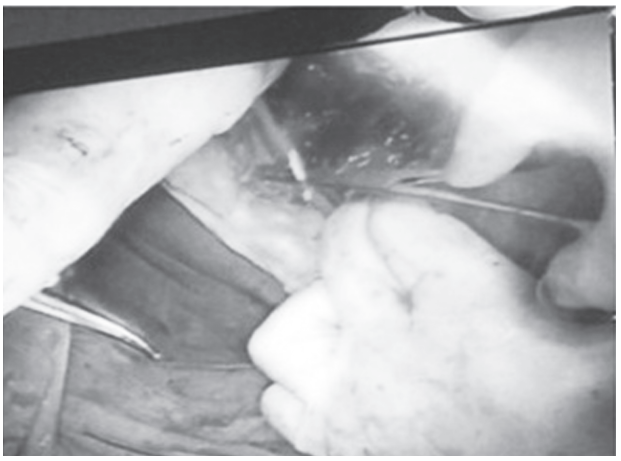


Figure 5 Image showing laparotomy and retrieval of IUD

A diagnosis of post-surgical hematometra with misplaced IUD was made and patient was posted for Laparotomy with evacuation of hematometra. During the procedure, cervical dilatation was tried but the dilator could not be passed beyond the internal os, hence the hematometra could not be evacuated. So, it was decided to proceed with Laparotomy. Hysterotomy with evacuation of 50 to 60ml of hemotometra was done. Internal-os could not be localized even through the hysterotomy incision, as there was no communication between the uterine cavity and cervix probably due to inappropriate closure of uterine incision during LSCS. Reconstruction of the communication could not be done because of the thick intervening septum created iatrogenically and thinned out posterior wall of uterus. Hence, hysterectomy was done after stenting the left ureter because of the dense adhesion in the left parametrium caused by misplaced CU-T. Under C- arm guidance IUD was traced and retrieved with great difficulty. Postoperative period uneventful.

DISCUSSION

Intrauterine contraceptive device has been a part of the national family planning programme since the sixties. Immediate post partum insertion of IUD's appeared safe and effective, though comparison with other time insertions is limited.[4] Advantages of immediate postpartum insertion include high motivation, assurance that the women is not pregnant and convenience.[4] The PPIUCD can be placed within 10 minutes of expulsion of placenta following a vaginal delivery (post placental), during cesarean section before closing uterine incision (intracesarean) or within 48 hours following child birth.

The technique of insertion of intracesarean IUD is very simple. It is introduced through the uterine incision and placed at the uterine fundus manually or using a ring forcep. It is important not to attempt to pass the string of the IUD through the cervical os before closure of the uterus as this will displace IUD into the lower uterine segment and may in result in expulsion.

The reported incidence of perforated IUD is 0.87 per 1000 insertion.[5] It is speculated that most perforations occur at the time of insertion, although some have proposed that perforations can arise secondarily as well. The factors associated with uterine perforation are the timing of insertion in relation to termination of pregnancy, the position and anatomy of uterus, the insertion technique and the experience of the person inserting IUD[6]. No significant difference was found between rates of perforation when different types of IUD's were compared[7]. After perforating the uterus IUD can migrate to colon, appendix,wall of iliac vessels, bladder, omentum, perirectal fat, retroperitoneal space, pouch of Douglas and ovaries.[8-11] Most perforations are uncomplicated. Uterine perforations most often are asymptomatic, therefore unrecognized at time of insertion and may not be recognized until years later. It is first suspected when the woman experiences unintended pregnancy or goes for removal of the IUD, and the strings cannot be located. 85% of perforations do not affect other organs, but the remaining 15% lead to complications in the adjacent visceral organs usually the intestines.[12] To prevent the delayed diagnosis and morbidity the patients with IUD should be alerted about the possibility of its migration and importance of regular self-examination for missing threads that is useful for early detection of migration of intrauterine devices.

Computerized tomography (CT) Scan, Pelvis X–Ray, Hysteroscopy, Laparoscopy and Colonoscopy are other diagnostic methods that may assist in proper diagnosis.[13] It has been suggested that an IUD located in the abdominal cavity should be removed even in asymptomatic patients because of risk of adhesion formation and damage to the surrounding structures.[14] Copper containing IUD has been shown to cause considerable tissue response when present in peritoneal cavity as seen in our case. Even WHO advises removal of all migrated devices, even in asymptomatic patients, because of medico legal implications. However management is still debated, some authors still feel that surgical removal is not necessary in asymptomatic patients.[15] The accepted method of treatment of a perforated IUD is surgical removal by laparoscopic

approach. Laparotomy is necessary if the device is embedded in the viscera or bound by adhesion. In our patient it was removed by laparotomy as it was located deep in the parametrium and also because we anticipated adhesion caused by the failed previous procedures.

There are no reported cases of uterine perforation while placing the PPIUCD in any of the studies reviewed. However, if it occurs, the basic steps of managing a uterine perforation are the same as that of regular IUD insertion.

In our case the migration of the IUD into the peritoneal cavity would have occured through the uterine incision, as no other site of perforation of uterus could be identified. The IUD would have migrated most probably during the immediate post partum period. Both the complications hemotometra and migration of IUD in our case may have resulted from improper closure of the uterine incision at LSCS. Most probably the entire thickness of the uterine musculature has not been included resulting in weakness at the suture site with subsequent migration of IUD, and the posterior wall of uterus has been included in sutures along the entire length of uterine incision resulting in hematometra. Though there are no strict guidelines for the use of particular type of suturing technique, double-layer closure involving the entire thickness of the uterine wall has a better strength than single layer closure.

CONCLUSION

There is an increasing rate of operative delivery in developing countries, but there is less number of trained doctors to perform emergency surgeries especially in the periphery, leading to increased incidence of post-operative complication. Adequate training of health professional is essential to increase the acceptance of family welfare services, to break the myths associated with IUD in the community and to lower incidence of complications.

Consent of patient: Obtained

Conflict of interest: None

REFERENCES

1. Sunita S, RekhaB, Rupali D, Divya, Anjali D, Achla Betal. Clinical outcome of postplacental copper T 380A insertion in women delivering by caesarean section. J Clin Diagn Res 2014 sep;8(9):0C01–4.
2. Kapp N, Curtis KM. Intrauterine device insertion during the postpartum period: a systematic review. Contraception 2009 oct;80(4):327-36.
3. Gill RS, Mok D, Hudson M, Shi X, BirchDW, Karmali S. Laparoscopic removal of an intra-abdominal intrauterine device: case and systematic review. Contraception 2012 Jan;85(1):15-8.
4. Grimes DA, Lopez LM, Schulz KF, Van Vilet HAAM, Stanwood NL. Immediate post-partum insertion of intrauterine devices. Cochrane Database Syst Rev. 2010;5:CD003036.
5. Grimaldi L, De Giorgio F, Andreotta P, D'Alessio MC, Piscicelli C, Pascali VL. Medicolegal aspects of an unusual uterine perforation with multiload–Cu375R. Am J Forensic Med pathol 2005 Dec;26(4):365-6.
6. Arslan A, Kanat-Pektas M, Yesilyurt H, Bilge U. Colon penetration by a copper intrauterine device: a case report with literature review. Arch Gynecol Obstet 2009 Mar;279(3):395-7.
7. Heartwell SF, Schlesselman S. Risk of uterine perforation among users of intrauterine devices. Obstet Gynecol 1983 Jan;61(1):31-36.
8. KassabB,Audra P. The migrating intrauterine device. Case report and review of literature. Contracept Fertil Sex 1999 Oct;27(10):696-700.
9. Sarkar P. Translocation of a Copper 7 intra-uterine contraceptive device with subsequent penetration of the caecum: case report and review. Br J Fam Plann 2000 Jul;26(3):161.
10. Silva PD, Larson KM. Laparoscopic removal of a perforated intrauterine device from the perirectal fat. JSLS 2000 Apr-Jun;4(2):159–162.
11. Roy KK, Banerjee N, Sinha A. Laparoscopic removal of translocated retroperitoneal IUD. Int J Gynaecol Obstet 2000;71(3):241–243.
12. Zakin D, Stern WZ, Rosenblatt R. Complete and partial uterine perforation and embedding following insertion of intrauterine devices. I. Classification, complication, mechanism, incidence, and missing string. Obstet Gynecol Surv 1981 Jul;36(7):335-53.
13. Taras AR, Kaufman JA. Laparoscopic retrieval of intrauterine devices perforating the sigmoid colon. JSLS 2010 Jul-Sep;14(3):453–5.
14. Tuncay YA, Tuncay E, Guzin K, OzturkD, Omurcan C, Yucel N. Transuterine migrations as a complication of intrauterine contraceptive devices. six case reports. Eur J Contracept Reprod Health Care 2004 Sep;9(3):194-200.
15. Markovitch O, Klien Z, Gidoni Y, Holzinger M, Beyth Y. Extra-uterine mislocated IUCD: is surgical removal mandatory? Contraception 2002 Aug;66(2):105-8.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Aggressive Primary Neuro Ectodermal Tumour in Kidney: A Rare Entity

Barua Sasanka Kumar[1], Bordoloi Hrishikesh[2], TP Rajeev[3], Sarma Debanga[4]

***Received** on March 07/2015; **accepted** (revised) on March 22/2015; **approved** by author on May 11/2015*

ABSTRACT

Primitive Neuro-Ectodermal tumor (PNET) of kidney is a rare tumor with only a few published reports. We report here a case of PNET of kidney in a female aged 20 years who reported of vague pain and lump in loin with a history of rapid increase in size of the lump. On CT imaging, on the left side a large heterogeneous, enhancing mass 15.1x15.4cmx17cm was seen arising from the upper pole of the left kidney.Radical nephrectomy was done along with removal of para-aortic nodes detected intra-operatively. Histopathology revealed sheets of small round cells intervened by hemorrhagic cystic areas with surrounding thin rim of normal kidney tissue. Immunohistochemistry showed diffuse membrane positivity of tumor cells for CD99. Post-operative USG carried out 18 weeks after surgery revealed an ill-defined retroperitoneal mass with ascites, pulmonary metastasis and pleural effusion with presentation of sub-acute intestinal obstruction. The patient succumbed to pulmonary complications later. PNET of the kidney is a very rare and aggressive tumour with poor prognosis. The disease-free survival rate at 7.5 years is around 45–55% in well-confined cases.

***Keywords:** Primitive neuro-ectodermal tumor, round cell tumour, ewings sarcoma, rare renal tumor*

INTRODUCTION

Primitive Neuroectodermal Tumor (PNET) of kidney is a rare tumor with only few published reports. This tumor is the soft-tissue equivalent of the Ewing sarcoma and malignant small cell tumor of the thoraco-pulmonary region.[1] Primitive neuroectodermal tumor is a type of sarcoma that occurs in the first two decades of life.[2] As the tumor is highly aggressive, it is often diagnosed in advanced stage.[3] We report here a case of Primitive Neuro-Ectodermal Tumor of kidney in a female aged 20 years

CASE HISTORY

An unmarried young female presented with a month long history of vague abdominal pain. She noticed fullness of the flank and a gradually progressing distinct swelling on her left upper abdomen with dull pain initially, radiating to back. During the course of the last one-month there was sharp increase in intensity of pain and she sought medical help when over the counter drugs failed to offer

Address for correspondence and reprint:
[1]Associate Professor (**Corresponding Author**)
Email: sasankagmch@gmail.com
Mobile: +919864096583
[2]M.Ch. Trainee (Corresponding Author)
Email: drhrishi.uro@gmail.com
[3]Professor
Email: rajeevtpuro@gmail.com
[4]Assistant Professor
Department of Urology
Gauhati Medical College and Hospital
Guwahati, Assam, India
Email: debangasarma@gmail.com

relief. She had no fever, chills, nausea, vomiting, diarrhoea, or change in bowel habits. She had no history of hematuria, dysuria, pain or burning on urination, bloody stools or any other significant abdominal ailment in the past. Her menstrual history too was insignificant.

On physical examination her blood pressure was 110/70 mm Hg, pulse was 96 beats per minute, respirations were 18/min and temperature was 37.3°C. Her general examination was unremarkable. Her heart sounds were regular and without murmurs, and a pulmonary examination showed equal breath sounds bilaterally. Abdominal examination revealed an irregular, fixed, tender mass in the left upper quadrant, filling the entire left upper quadrant and palpable upto the pelvic rim. The mass was approximately 15 cm long, extending from the left subcostal margin to the anterior superior iliac crest on the left side and crossed the midline. The inferior border of the mass was ill defined and difficult to follow.

Her laboratory values were as follows: urinalysis was negative for any red blood cells, white blood cells, bacteria, glucose, or protein and the culture report was sterile. Her white blood cell count was 9,400/µL, with hemoglobin of 7.7 g/dL, and a hematocrit of 37.7%. Renal function test: creatinine 0.8 mg/dL, blood urea nitrogen 16 mg/d, sodium 139 mEq/L, potassium 4.1 mEq/l and glucose 90 mg/dL. CECT of the abdomen showed 15.1cm x 15.4cm x 17cm well defined isodense mass arising from the upper pole of the kidney with heterogenous enhancement and few areas of hypo-density suggestive of necrosis.

She was posted for radical nephrectomy and during surgery, an 18x16x16cm tumor was found invading beyond the Gerota's fascia. Histopathological examination showed extensive necrosis and hemorrhage within the tumour with small round cells arranged in sheets suggestive of round cell tumour. On immunohistochemistry it stained positively for CD 99. We could not do fluorescent in situ hybridization to demonstrate EWS-FLI-1 gene fusion. Tumour cells were found in 7 of the 11 nodes removed. The patient recovered well after surgery and was discharged on the 10th post-operative day with the advice to attend after 2 weeks for chemo-radiation. However, she failed to turn up for follow up and was readmitted 18 weeks later with a mass of 4cmx6cmx6cm in the renal bed, which was encasing the aorta. This mass also impinged on her left colon. She presented with features of sub acute intestinal obstruction. Her chest radiographs showed bilateral multiple nodular opacities suggestive of metastasis. Her condition worsened with severe pulmonary and gastro-intestestinal symptoms. She succumbed to pulmonary complications, two weeks after her admission.

DISCUSSION

PNET belongs to the Ewings family of sarcomas and bears pathological similarity to its bony lesion.[1, 4, 5] They were first described by Stout in association with peripheral nerves.[6] PNET shows strong positivity for MIC-2 gene product like CD-99 by which it can be distinguished from other small round cell tumors. The distinguishing genetic factor in primitive neuroectodermal tumor is the association with a translocation between chromosomes 11 and 22, the t(11;22)(q24;q12).[7, 8, 9] If needed, the diagnosis can be confirmed by demonstration of the t(11:22) or the EWS-FLI-1 gene fusion with the help of fluorescent in situ hybridization (FISH) technique or RT-PCR which was not done in our case.[2, 10] In our case diagnosis of primitive neuroectodermal tumor was based on the histopathological findings of the surgical specimen and immunohistochemical staining. The National Wilms' Tumor Study Group in their study have concluded that these malignancies represent a diverse group of high-grade tumor which is not always easy to place in a single category, even though they are evaluated immunohistochemically and by molecular genetic tools.

Children and adolescents are most frequently affected. The most common locations are the head, neck, trunk, and extremities.[6] The clinical features of PNET kidney may be nonspecific like vague pain and lump in the left loin as seen in our case and there may be irregular fever, weight loss, and occasional hematuria. The differential diagnosis of renal tumors in this age group includes renal cell tumor, Wilms tumor, and lymphoma.[7, 8]

The treatment of primitive neuroectodermal tumor is surgical resection and an adjuvant chemotherapy regimen consisting of combinations of doxorubicin, cyclophosphamide, vincristine, and dactinomycin. In some cases chemotherapy is started before surgery.[8] Radiation therapy may prove beneficial in some cases. These tumors have a poor prognosis, with a disease-free survival of 45% at 7.5 years.[7] In view of its poor prognosis and aggressive nature renal PNET should be differentiated from other small blue round cell tumors like neuroblastoma,

rhabdoid tumor of kidney, nephroblastoma, small cell carcinoma, synovial sarcoma (monophasic, poorly differentiated) and non-Hodgkin lymphoma (NHL).

A review of the literature revealed that there are very few cases of PNET involving the kidneys reported. The diagnosis of such tumours is based on the clinical setting of aggressive nature of the tumour growth in the adolescent age group and they need early surgical extirpation. A prompt diagnosis suggested by immunohistochemistry and early chemotherapy regimen may be helpful in such a situation to improve the prognosis.

Source of support in the form of grants, equipment, drugs, or all of these: None

Acknowledgement: None

Conflict of Interest: None

Consent Taken: Identity concealed

REFERENCES

1. Verrill MW, Judson IR, Harmer CL, Fisher C, Thomas JM, Wiltshaw E. Ewing's sarcoma and primitive neuroectodermal tumor in adults. are they different from Ewing's sarcoma and primitive neuroectodermal tumor in children? J Clin Oncol 1997;15:2611-21.
2. Seaff M, McManus A, Scheimberg I, Paris A, Shipley J, Baithun S. Primitive neuroectodermal tumor of the kidney confirmed by fluorescence in situ hybridization. Am J Surg Pathol 1997;4:461-8.
3. PNET of kidney: Report of four cases; Palash Kumar Mandal, Supti Mukherjee, Sravasti Roy, and Nirmal Kumar Bhattacharyya; Indian journal of medical and paediatric oncology 2012pril 4;33(2):130-3.
4. Antoneli CB, Costa CM, de Camargo B, Sredni ST, Alfer W Jr., Chojniak R. Primitive neuroectodermal tumor (PNET)/extraosseous Ewing sarcoma of the kidney. Med Pediatr Oncol 1998;30:303-7.
5. Benesch M, Urban C. Is primitive neuroectodermal tumor of the kidney a distinct entity? Cancer 1998;82:1414-6.
6. Hollis LJ, Poole S, Hern J, Patel KS. Primitive neuroectodermal tumor of the masseter muscle. J LaryngolOtol 1996;110:1179-81.
7. Furman J, Murphy WM, Jelsma PF, Garzotto MG, Marsh RD. Primary primitive neuroectodermal tumor of the kidney. Case report and review of the literature. Am J Clin Pathol 1996;106:339-44.
8. Patel SR, Benjamin RS. Sarcomas of soft tissue and bone. Harrison's principles of internal medicine. 14th ed. New York:McGraw-Hill;1998.
9. Dehner LP, Primitive neuroectodermal tumor and Ewing's sarcoma. Am J Surg Pathol 1993;17:1-13.
10. Quezedo M, Benjamin DR, Tsokos M. EWS/FLI-1 fusion transcripts in three peripheral primitive neuroectodermal tumors of the kidney. Hum Pathol 1997;28:767-71

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Extramarital Affair Claims Child's Life

Dalal Deepsekhar[1], Dey Arijit[2], Biswas Sujash[3], Das Abhishek[4], Bandyopadhyay Chandan[5], Banerjee Molly[6]

***Received** on March 22/2015; **accepted** (revised) on April 19/2015; **approved** by author on May 15/2015*

ABSTRACT

In India two out of three children suffer from various types of abuse be it physical, emotional or sexual. Though the reasons can be manifold, mostly the sufferers are unwanted children. The present case is about a two year old female child who was brutally beaten by her mother, upon provocation by the mother's lover and was thrown away in a river bank. Though found alive at the time of recovery, she died in the hospital four days later. Meticulous autopsy examination was corroborative with the said incidence with evidences of multiple injuries all over the body including various fractures of bones. This is a unique case report of brutal physical abuse of a child who paid for her mother's extramarital affair.

***Keywords**: Abuse, Unwanted children, Brutally, Autopsy*

Address for correspondence and reprint:
[1]Assistant Professor (**Corresponding Author**)
Forensic Medicine and Toxicology, ICARE Institute of Medical Sciences and Research and Dr. B.C. Roy Hospital, Haldia, WB. **Email**: deepsekhardalal@gmail.com
Mobile: 09433402243
[2]PGT Forensic Medicine and Toxicology, NRS Medical College; [3]Asst Prof. Forensic Medicine and Toxicology, Medical College Kolkata; [4]Asst Prof. Forensic Medicine and Toxicology, Sikkim Manipal Institute of Medical Sciences, Sikkim; [5]Asst Prof. Forensic Medicine and Toxicology, Medical College Kolkata; [6]Demonstrator, Forensic Medicine and Toxicology, NRS Medical College, Kolkata

INTRODUCTION

According to World Health Organisation, child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power.[1] There are four types of child abuse, i.e., physical abuse, sexual abuse, emotional abuse and neglect. In India, two out of three children suffer from various types of abuse be it physical, emotional or sexual. What we see in print or electronic media truly is the tip of the iceberg. The true prevalence of violence against children is difficult to establish because of not or under-reporting this problem.[2]

CASE HISTORY

A local fisherman of Jhargram went to the bank of Subarnarekha river in the morning for fishing as a part of his daily routine. Suddenly he saw a baby's head nearby, with the rest of the body from neck remaining buried inside the sand, in a semiconscious state. He also found bits of broken biscuits and other food material around the baby on the surface of the ground. He rushed and recovered the unconscious injured body of a baby girl by digging up the sandy soil with the help of some local people. Later he informed the matter to the local police station. On the same day the girl was admitted in NRS Medical College and Hospital but she was referred to several hospitals several times fearing complications. The baby succumbed due to her injuries four days later in the late night. Next day she was sent for autopsy.

The story as we could gather from the police was very shocking. The baby's parents, belonged to poor socio economic class. After the birth of the first daughter the father was not very happy only because it was a girl child. They were not at all a happy couple. The father worked far from home on daily wage basis for months together in different sites. Now, after the birth of the second daughter the situation deteriorated drastically. The husband blamed his wife for everything and they fought over small petty issues. In the meantime, a mason shifted into that area when the baby's father was away for his job. Gradually the baby's mother and this mason came closer and they decided to marry. The mason's idea was to get rid off the little child because the elder one was a bit fond of her father and won't make any problem if her mother leaves her. Understanding the situation that the younger one will never leave her mother, the mason and the baby's mother decided to kill her. So, one night just after having dinner, the mother started beating the younger child mercilessly. Next morning in the early hours she took away the unconscious baby to the bank of the Subarnarekha river. She then dug up some sandy soil by the riverside and buried the baby upto neck keeping the head outside in the air. Moreover, she left some food around the head thinking that some scavengers would be attracted to the food and eat up the child at the same time. Now the fisherman happened to see the unconscious half-buried body and informed the police.

AUTOPSY FINDINGS

The body was of a two year old female child who was of normal built, moderate nourishment and brown complexion. Height was 2.5 feets. Rigor mortis was not present and post-mortem staining was appreciable on the dependent parts of the body.

IMPORTANT EXTERNAL INJURIES

1. One round abrasion 1cm in diameter, 2 inches above the right eyebrow over the temple.
2. One oval abrasion (2.5x1) cm in measurement, 1.7 inches above the left eyebrow over the temple.
3. Bilateral black eyes.

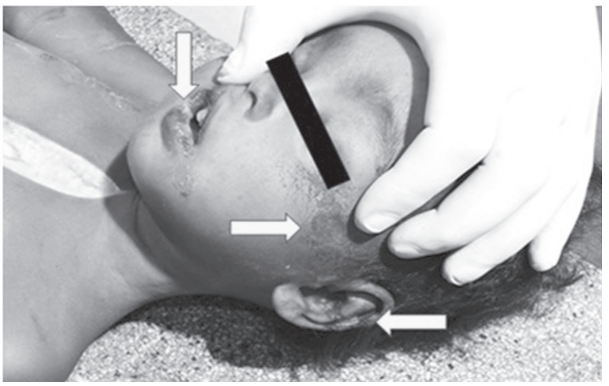


Figure 1 Abrasions on face, ear and injuries on lips

4. One abrasion starting just below the lateral canthus of the left eye extending upto a grossly straight line 2 cm in front of the left tragus measuring (2x1) inches. Another abrasion centrally on external ear over an area of (1x0.5) inch. Severely bruised both lips with areas of scattered abrasion over and inside (**Figure 1**).

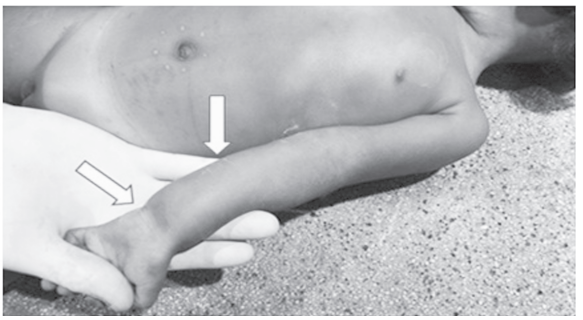


Figure 2 Contusion on left wrist, forearm and elbow crease. Fractures of forearm bones (left) appreciable

5. One bruise over an area of (2x2) inches just infront of left wrist joint. Another bruise around the left elbow joint. Cattered areas of bruise over the mid part of swollen left forearm (**Figure 2**).

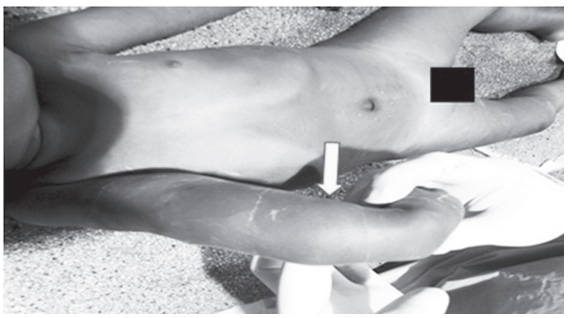


Figure 3 Fractures of forearm bones (right) appreciable

6. Areas of discrete scattered bruises over the swollen right arm and forearm (**Figure 3**).
7. Scratch abrasions 3-5 in number and 4 inches in length on an average starting from the left flanks and ending 1.5 inches left to the midline on the back.

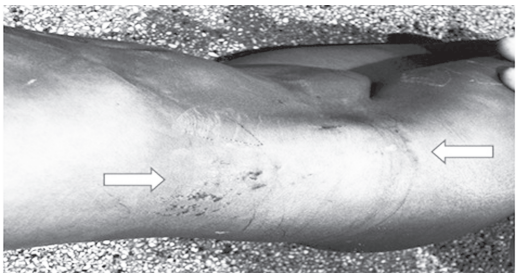


Figure 4 Multiple abrasions in the right flank

8. Scattered graze and scratch abrasions over right flanks measuring (4x3) inches tending to go backward (**Figure 4**).
9. Abrasion of 1 cm diameter over the upper right side of right knee joint.
10. One 0.2 cm puncture wound on the back side of right knee joint.

IMPORTANT INTERNAL INJURIES

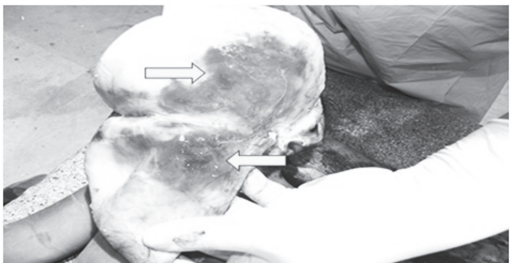


Figure 5 Scalp haematoma

1. One scalp haematoma over the right parietal bone measuring (4x3) inches (**Figure 5**).

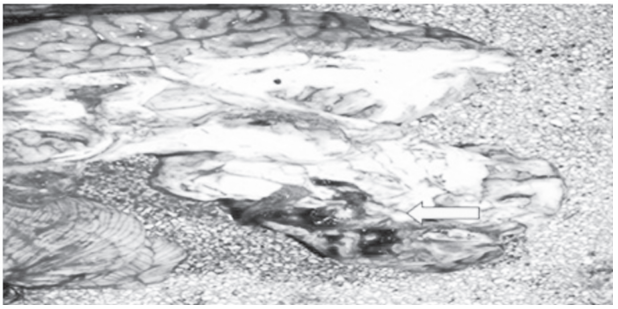


Figure 6 Intracerebral haemorrhage

2. Subdural and subarachnoid haemorrhages over both cerebral haemorrhages with few blood clots.
3. Intracerebral haemorrhage in the right occipital lobe (**Figure 6**).
4. Fracture of the lower end of the left radius.
5. Fracture of the left forearm 2 inches below the elbow crease.
6. Fracture of the right forearm 2.5 inches below the elbow crease.
7. All the viscerae were congested.

DISCUSSION

Although child abuse occurs at all socioeconomic levels, it is highly associated with poverty and psychosocial stress, especially financial stress. Child maltreatment is strongly correlated with less parental education, underemployment, poor housing, welfare reliance and single parenting.[3] The World Health Organisation in the year 2000 estimated that about 57000 children died from fatal maltreatment.[1] The death of the baby merely was an unfortunate outcome of extramarital love affair who proved to be an obstacle to the new pair. She also had to die to pinpoint to the large unreported cases of killing of unwanted female child. Here, in this particular case the child proved herself to be unwanted to her father for just being a girl and also a hindrance to the sprouting extramarital affair. The psyche of our society should consider these two things separately while both are interconnected.

The mother who was convicted, confessed that after feeding the girl at night she held the baby's hair and struck her against the wall and the floor, which resulted in intracerebral haemorrhages and abrasions over the face. Head trauma is the leading cause of child abuse fatalities.[4] As the baby started crying the mother tried to stop her by pressing over the baby's mouth with her hands resulting in the bruised appearance of the lips. She was hit with a stick on the forearms which broke them on both sides. A pointed instrument was inserted into the right knee joint area from the back. Gradually the girl became unconscious and was taken away by the mother to the banks of Subarnarekha river in the early hours where women of that village used to go to defaecate. To ensure the child's death, just after burying her up to the neck level she threw some food around to attract scavengers thinking they might devour the baby as well. Fortunately the baby was recovered but died after hospitalisation. The cause of death was intracranial haemorrhages though there were no fractures of the skull. The most common

cause of death in abused children is intracranial damage, with or without skull fracture.[5] Paediatric abusive head injury causes death in approximately 30% and permanent neurologic damage in upto 80% of victims.[6]

CONCLUSION

There are various components of child abuse: child, care giver stress, etc. Childhood world over is not homogenous, several childhood co-exist depending on the social status, economic status, physical ability, mental ability and geographical location. Physical abuse of children takes place across cultures, societies, economic and social strata. It is seen largely in homes where frustrations are high; parents have poor parenting skills and have little or no self-control; where there are visible marital problems, substance abuse, domestic violence and so on. Children are physically small, vulnerable and totally dependent on parents. A child is dependent on parents for all his/her needs be it food, shelter, protection, health care, love and care or education. He/she is constantly seeking approbation and positive reinforcement of his/her own value from the parent/caregiver. Thus, constant physical abuse can be extremely demoralizing for the child, no matter what the provocation. Often the child is the easiest target for the parents to vent their frustration on. It is important to understand that the cycle of abuse is self-perpetrating. A child who has faced severe forms of abuse during childhood is likely to become an abuser in later years.[7]

There can be four types of child abuse: physical abuse, sexual abuse, emotional abuse and neglect.[1] Physical abuse is physical aggression directed at a child by an adult.[6] Child sexual abuse (child molestation) is the involvement of dependent, developmentally immature children and adolescents in sexual activities. They do not truly understand and to which they are unable to give informed consent or which violate social taboos or family rules.[8] Emotional abuse includes degradation, destruction of personal belongings, excessive criticism, humiliation, inappropriate or excessive demands, name-calling, ridicule, torture, with holding communication.[6]

Only few cases of child abuse and/or death come to the surface. To conclude, suspected cases of child abuse should be well documented and reported to the appropriate public agency which should assess the situation and help to protect the child.[9] Here is a poster which shows that we can call 1098 if we want to help a needy child (**Figure 7**).[10]

Figure 7 Child Line Poster

Contribution of Authors: We declare that this work was done by authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

Conflict Of Interest: None.

Declaration: This article has not been submitted anywhere else for publication.

REFERENCES

1. Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R. World report on violence and health, World Health Organization Geneva 2002; p. 59-60.
2. Mahanta P. Modern Textbook of Forensic Medicine and Toxicology. 1st ed. New Delhi: Jaypee brothers Medical Publishers (P) Ltd; 2014. p. 165.
3. Sadock BJ, Sadock VA. Kaplan & Sadock's synopsis of psychiatry: behavioral sciences/clinical psychiatry: 10th ed. Wolters Kluwer Lippincott Williams and Wilkins. p. 1339.
4. Kellogg ND, MD and the Committee on Child Abuse and Neglect. Pediatrics: June 1, 2007;119(6):1232.
5. Saukko P, Knight B. Knight's Forensic Pathology, 3rd ed. London: Arnold; 2004. p. 469.
6. Agarwal A. Textbook of Forensic Medicine and Toxicology. Abichal publishing company; 1st ed. 2014. p. 483-485.
7. Kacker L. Study on child abuse: India. Ministry of women and child development, Government of India, 2007. p. 49.
8. Reddy KSN, The essentials of forensic medicine and toxicology. 33rd ed. New Delhi: Jaypee brothers Medical Publishers (P) Ltd; 2014. p. 425.
9. Dubowitz H, Bennett S. Physical abuse and neglect of children. Lancet. 2007 Jun 2;369 (9576):1891-9.
10. Available from: URL:httpp:www.childlineindia.org.in.

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

Cytological Diagnosis of Multiple Myeloma Presenting as Unilateral Pleural Effusion: A Rare Case Report

Kalita Lohit kumar[1], Kalita Chayanika[2], Gogoi Pabitra Kumar[3], Sarma Umesh Chndra[4]

***Received** on March 05/2015; **accepted** (revised) on March 11/2015; **approved** by author on May 12/2015*

ABSTRACT

Multiple myeloma presenting as a pleural effusion is extremely rare. Generally, it is a late complication which is associated with a poor prognosis. A 58-year-old male presented with severe weakness, palpitation on exertion, dyspnea and fever for last four months. Clinically he was diagnosed as pulmonary tuberculosis. Chest radiograph showed left sided pleural effusion. Pleural cytology revealed numerous plasma cells, consisting of mature and immature - binucleated and atypical types. Cytological differential diagnosis included myelomatous effusion and immunoblastic type non-Hodgkin's lymphoma. Bone marrow biopsy and serum protein electrophoresis confirmed the diagnosis as plasmoblastic type multiple myeloma. Although extremely rare, Myelomatous pleural effusion as an initial presentation should always be considered in presence of atypical plasma cells in body fluids irrespective of age.

***Keywords**:Cancer, Mediastinum, Cardiac, Infection*

INTRODUCTION

Multiple Myeloma (myelo + oma = marrow + tumors) is a malignant proliferation of plasma cell and plasmacytoid cells characterised nearly always by the presence, in the serum and/or urine, of a monoclonal;l immunoglobulin (Ig) or Ig fragment.[1-4] Multiple Myeloma (MM) is the most common form of plasma cell dyscrasia, affecting B-cells that have traversed the postgerminal center. It is characterized by clonal proliferation, in bone marrow microenvironment, of malignant plasma cells that secrete a monoclonal immunoglobulin called M-protein, usually IgG or IgA and detectable by serum protein electrophoresis, or only circulating k or ë-free light chains. Malignant pleural effusion in multiple myeloma is a rare

Address for correspondence and reprint:
[1]Assistant Professor (**Corresponding Author**)
Department of Oncology, Gauhati Medical College and Hospital, Guwahati, Assam
Email: lkkalita2013@gmail.com
Mobile: 9435061804
[2]Assistant Professor, Department of Dermatology, Gauhati Medical College and Hospital, Guwahati, Assam
[3]Prof. and HOD, (Rtd)., Department of Clinical Hematology, Gauhati Medical College and Hospital, Guwahati, Assam
[4]Vice-Chancellor, Srimanta Sankadeva University of Health Sciences, Narakasur Hill-Top, Guwahati Assam

condition and is seen in less than 1% of multiple myeloma cases.[5] Most importantly, in practical scenario identification of the atypical plasma cells in body fluids is important and often be missed when these are scant and mature appearing. Hence, recognition of atypical plasma cells in fluids is critical in respect of both therapeutic and prognostic considerations as this feature indicates a poor prognosis.[6] To our knowledge, in literature there have been very few cases reported so far, in which pleural effusion was the initial presentation.[6-11] Here, we report atypical presentation of multiple myeloma as left sided pleural effusion in an elderly patient.

CASE HISTORY

A 58-year-old male presented with severe weakness, palpitation on exertion, dyspnea and fever for last four months. There was history of headache with nausea, occasional mild fever for which he was receiving conservative treatment from local treating physician. There was no significant past history in his life except one episode of blood vomiting around ten years back, which was diagnosed as ruptured peptic ulcer and got recovered on conservative treatment. There was no family history of tuberculosis, malignancy, bleeding disorders or sudden death.

FINDINGS

Clinical examination revealed pallor, generalized bony tenderness, signs of left sided pleural effusion, no sign of pulmonary hypertension, organomegaly, cardiac or renal failure.

A diagnostic pleural aspiration was performed and cytospin preparation was made. Giemsa stained smears showed high cellularity, comprising of many mature and immature plasma cells in a proteinaeous and haemorrhagic background (**Figure 4**). These cells had abundant dense blue cytoplasm and a large eccentric nucleus. Moreover, frequent binucleated and multinucleate forms, mitotic figures and scattered plasmablasts with prominent nucleoli were also observed. Based on these findings, a diagnosis of plasma cell dyscrasia versus immunoblastic type non-Hodgkin's lymphoma was suggested. Skeletal survey, serum protein immunoelectropheresis, bone marrow aspiration and biopsy were advised to confirm the diagnosis. Laboratory investigation revealed Hemoglobin – 7.8 g/dl, ESR-120 mm ATEFH, peripheral smear showed marked rouleax formation, RBS – 73 mg/dl, LDH-904 U/L, serum creatinine – 0.9 mg/dl, pleural fluid for ADA 11.6 U/L, Serum protein electrophoresis showed no M –band, B2-microglobulin-3.32 mg/L (normal – 0.81 – 2.19 mg/L), Bronchial lavage fluid did not show malignant cells, no AFB and fungal elememts seen on bronchial aspirate, PSA-0.92 ng/ml. Bone marrow aspiration examination showed 60% plasma cell constituting both mature and immature type (**Figure 3**). Chest radiographs suggested left sided pleural effusion with mediestinal midline shift towards right side (**Figure 1**). X-ray skull demonstrated multiple punched out radiolucent lytic areas (**Figure 2**). Based on the above findings, a final diagnosis of nonsecretory multiple myeloma of plasmablastic type (MMPT) was made.

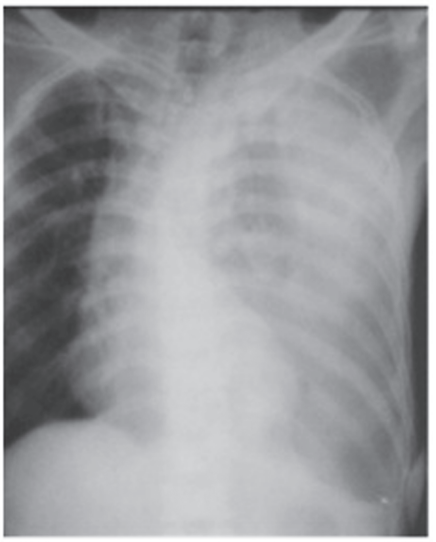


Figure 1 Chest radiographs suggested left sided pleural effusion with mediestinal midline shift towards right side

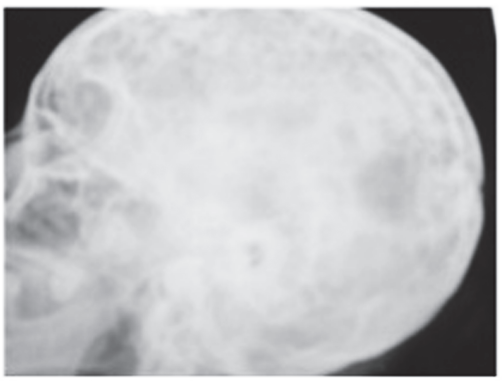


Figure 2 X-ray skull demonstrated multiple punched out radiolucent lytic areas

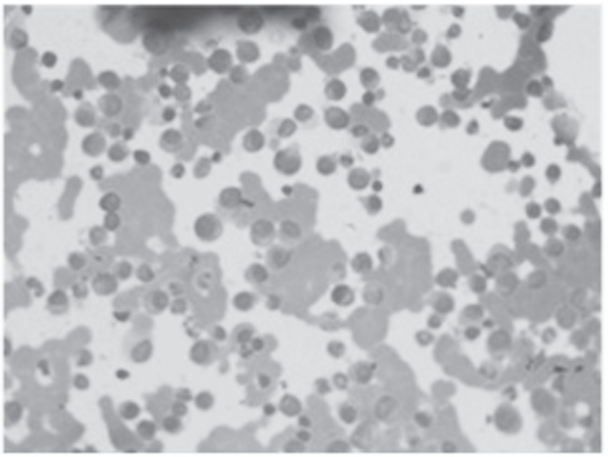


Figure 3 Bone marrow aspiration examination showed 60% plasma cell constituting both mature and immature type

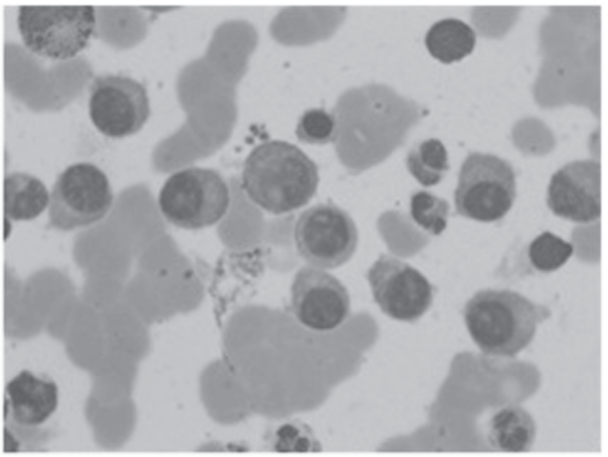


Figure 4 Giemsa stained smears of pleural fluid showed high cellularity, comprising of many mature and immature plasma cells in a proteinaeous and haemorrhagic background

DISCUSSION

Multiple Myeloma is a malignant proliferation of plasma cell and plasmacytoid cells characterised nearly always by the presence, in the serum and/or urine, of a monoclonal;l immunoglobulin (Ig) or Ig fragment. It usually occurs in elderly patients (mean age 71 years) and presents weakness, easy fatiguability, bone pains with or without pathological fractures, renal failure and recurrent infections.[12] Malignant pleural effusion is usually a rare and late complication in the course of the disease.[7,9,13] Hence, other etiologies of reactive pleural effusions like pneumonia, tuberculosis, congestive heart failure, collagen vascular disease, viral illness, carcinomatosis, AIDS and pulmonary thromboembolism should be excluded before a diagnosis of malignant myelomatous effusion is made.[13] On cytological examination,the picture can have a predominant lymphocytic infiltration with scattered plasma cells showing atypical nuclear features. Other common conditions of the non-myelomatous effusions that present with pleural effusion includes NHL, acute and chronic lymphoid leukemias, especially those with concomitant mediastinal involvement.[5, 10, 11] Thus, the cytomorphology of the plasma cells along with the clinical profile are helpful in differentiating reactive from malignant plasma cell infiltrates. High cellularity with a predominant plasma cell population in a haemorrhagic or necrotic background is suggestive of a malignant effusion. Prominent morphological features of malignant plasma cells are nuclear pleomorphism, prominent nucleoli, frequent mitosis and asynchronous maturation of the nucleus in relation to the cytoplasm. The three processes like Pleural fluid electrophoresis, flow cytometry and immunocytochemistry aid in confirming the monoclonality of the plasma cells.[13] Malignant pleural effusions in myeloma patients are usually resistant to treatment and often relapse in spite of aggressive chemo-radiotherapy necessitating pleurodesis.[6, 8] It is an alarming presentation, signifying worst prognosis. Death usually occurs within a few days to months. Therefore, recognition of the atypical plasma cells in the fluid is considered critical for therapeutic and prognostic point of views.[13] The present case is rare because the diagnosis was unsuspected in an elderly patient presenting with left sided pleural effusion. The message to the physicians is that the presence of atypical plasma cells in the body fluids should be carefully interpreted irrespective of the age and the patient should be thoroughly assessed for multiple myeloma.

REFERENCES

1. R. Alexanian and M. Dimopolous. The treatment of multiple myeloma *N. ENGL J Med 1994;330:484–489*

2. R. Bataille and J.L.Horousseau. multiple myeloma N Engl J Med 1997;336:1657-1664.

3. M. Hallek, P.L. Bergagel, and K.C. Anderson. Multiple myeloma: increasing evidence for a multistep transformation process *Blood 1998;91:3-21*

4. R.A. Kyle. Multiple myeloma: review of 869 cases Mayo Clin Proc 1975. 50: 29-40 *4a: Cancer incidence and mortality by race/Etyhnicity, 1998 -2001*

5. Manley R, Montath J, Patton W N. Coincidental presentation of IgA lambda multiple myeloma and pleural involvement with IgM kappa non-Hodgkins lymphoma. Clin Lab Haematol 1999;21:61-3.

6. Maachi M, Fellahi S, Diop ME, Francois T, Capeau J, Bastard JP. Pleural effusions as a first sign of IgD lambda multiple myeloma. Ann Med Interne (Paris) 2003;154: 70-2.

7. Garcia MR, Avisbal PN, Velasco GJL, Rueda RC, Bujalance ZD, Ramirez G. Pleural effusion as a presentation form of multiple myeloma. Rov Clin Esp 2001;20:424-5.

8. Elloumi M, Frikha M, Masmoudi H, et al. Plasmacytic pleural effusion disclosing multiple myeloma. Rev Mal Respir 2000;17:495-7.

9. Fernandez G MJ, Matia CAC, Gonzalez SR, Juarez RI, Jimeo CA. Multiple myeloma lambda IgG: myelomatous pleural effusion an unusual presentation. Ann Med Interne 2001;10:161-2.

10. Deshpande A, Munshi MM. Pleural effusion as an initial manifestation of multiple myeloma. Acta Cytol 2000;44:1034.

11. Andre M, Ponsonaille J, Komony J L, Filaire M, Travado P, Aumaitro O. Pleural and pericardial effusion as a first sign of multiple myeloma. Ann Med Interne 1999;150:443-5.

12. Howe HL, Wingo PA, Thun MJ, et al. Annual report to the nation on the status of cancer (1973 through 1998), featuring cancers with recent increasing trends. J Natl Cancer Inst 2001;93:823-42.

13. Palmer HE, Wilson CS, Bardales RH. Cytology and flow cytometry of malignant effusions of multiple myeloma. Diagn Cytopathol 2001;22:147-51.

Academic Excellence of Founder Life Member of IJHRMLP

Dr. Keshab Bora receiving the memento and a citation from Dean Dr. T. Chandra for attending the workshop on Teaching Methodology conducted by Medical Education Unit of MMCH and RI on 27th and 28th January 2011

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

CASE REPORT

A Treatment Refractory Case of Taenia Saginata in a Tertiary Care Hospital

Dina Raja[1], Chimanjita Phukan[2], Naba Kumar Hazarika[3]

***Received** on March 05/2015; **accepted** (revised) on April 19/2015; **approved** by author on May 11/2015*

ABSTRACT

We report a case of an 11 year-old, muslim boy in whom a 1.4-meter long worm was expelled in his faeces. He gives a history of frequent expulsion of the worm through his nostrils and mouth too, which is an unusual presentation. He was advised treatment with tab Nicloside and tab Albendazole and given supportive treatment for other minor complaints like vomiting, loss of appetite, fatigue and weight loss. In Assam, Taenia Solium more commonly causes taeniasis. Documented cases attributable to Taenia Saginata in this part of the country are very few. This case has been reported as a treatment failure as he still continues to expel worm in his faeces even after been admitted in various hospital for his problem. Taeniasis is a preventable disease and measures should be taken to bring down its incidence.

***Keywords:** Beef tapeworm, Proglottids, Taeniasis*

Address for correspondence and reprint:
[1]Associate Professor (**Corresponding Author**)
Email: dinaraja@hotmail.com
Mobile: 09864039629
[2]Associate Professor, [3]Professor and HOD, Dept. of Microbiology, Gauhati Medical College and Hospital, Guwahati

INTRODUCTION

Taeniasis is endemic in Southeast Asia. Two species from the genus Taenia are common parasites of humans; the pork tapeworm or T. solium and the beef tape worm or T. saginata. Recent studies suggest that the Taenia found in Asia is a subspecies of T. saginata and it has been renamed as T. saginata asiatica.[1] Infection is acquired by taking improperly cooked beef or pork. Most cases of taeniasis are asymptomatic and usually complain of passage of Proglottids with stools. However, others present with pruritus ani (77%), nausea (46%), abdominal pain (43%), dizziness (42%), increased appetite (30%), and other mild gastrointestinal symptoms.[2] We report the case of an 11 year old Mohammedan boy coming with complaints of passage of worms in stool and through nostrils off and on for the last 5 months. On investigation, he was found to be suffering from Taenia saginata infection. He was advised Nicloside and Albendazole and given supportive treatment for other minor complaints like vomiting, loss of appetite, fatigue and weight loss. In Assam, Taeniasis is more commonly caused by Taenia solium. Documented cases attributable to Taenia saginata in this part of the country are very few.

CASE HISTORY

An 11-year-old boy came to the department of Microbiology with a worm measuring approximately 1.4 meters long that was passed in the stool (**Figure 1**).

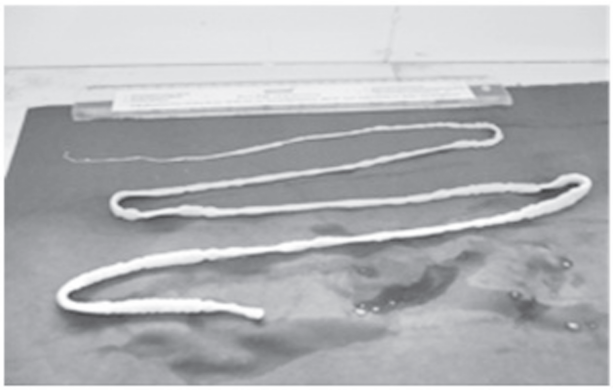


Figure 1 Taenia saginata (naked eye)

A muslim boy from the Darrang district of Assam presented to the paediatric outpatient department with history of passage of 1½ to 2 metre long worm in his stool 5 months back. This was followed by appearance of a 2 metre long worm from the nostrils after 2-3 days. Thereafter, there was frequent passage of worms in his stool for which he received treatment at the local PHC with antihelmenthic and liver support. A month later as he was still passing worms in his stool he sought treatment at Mangaldoi CHC. He was prescribed Albendazole suspension and Lactitol Monohydrate suspension daily at bed time for 3 weeks and on not being cured, he was referred to Gauhati Medical College Hospital. He was admitted in the pediatrics ward and on investigation he gave a history of loss of appetite and nausea for the same duration and consumption of beef regularly. Physical examination of the patient was normal, except mild tenderness in the epigastric region, tachycardia was noted, with normal blood pressure. Laboratory investigations revealed hemoglobin of 9g/dl, a leucocyte count of 12300/µl and eosinophil count of 13%. X-ray and ultrasonography of the abdomen was normal. He was treated with Albendazole and discharged afer a week. However, after a brief respite from his symptoms there was appearance of worms in his stool again for which he came back to GMCH and was admitted for a second time and advised treatment with niclosamide 500 mg and Albendazole 400 mg tablets daily for 4 weeks. But inspite of being treated, he still complained of passage of worms in his stool.

During his hospital stay he passed another long worm in the stool and came to our lab with it. Naked eye examination could ascertain it as a tapeworm with definite segments. On measuring its length it was found to be around 1.4 meters, with a quadrate head and flattened segmented body. On enquiring further regarding his living conditions and food habits, it was found that they belonged to an economically poor section and lived in an unhygienic condition. His diet included beef consumption both attributable to Taenia infection. There were also indications from the patient's version that the beef was consumed under cooked.

We advised him to give another stool sample for examination which was examined by direct saline wet mount (**Figure 2**) and concentration methods. Saline wet mount revealed broken segments of the adult worm and few eggs, which were bile stained (**Figure 3**), and spherical measuring about 40 m in diameter. The outer shell was not appreciated clearly, inner embryophore was brown, thick walled and radially striated with an oncosphere and hooklets. In the concentration method, the stool sample was concentrated by formalin in acetone and wet mount was prepared from the sediment for examination. The recovery of eggs by concentration method was much better and the yield was much higher.

Figure 2 Saline wet mounts reveals Proglottids

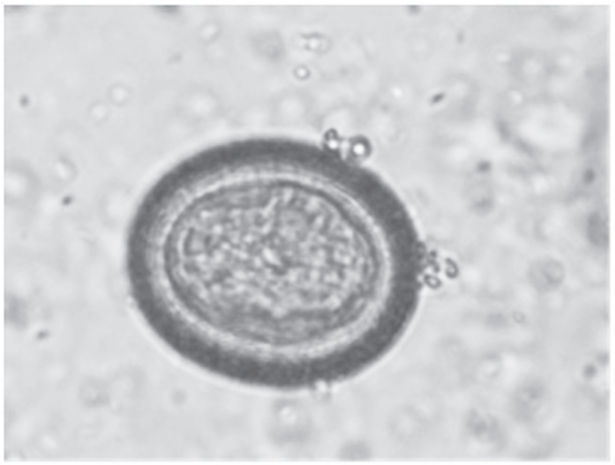


Figure 3 Bile stained egg of Taenia saginata

DISCUSSION

T. Saginata is the largest of species in the genus Taenia. An adult worm is normally 4 to 10 m in length, but can become very long; specimens over 22 m long are reported.[3] The disease is relatively common in Africa, some parts of Eastern Europe, the Philippines, and Latin America.[3] This parasite is found where beef is consumed, even in countries such as the United States, with strict federal sanitation policies. In the US, the incidence of infection is low, but 25% of cattle sold are still infected.[4] The total global infection is estimated to be between 40 and 60 million.[5] It is most prevalent in Sub-Saharan and the Middle East.[6]

The basic diagnosis is done from a stool sample where faces are examined to find the eggs of the parasite. The eggs of the Taenidae family look alike, so it is only possible to identify the eggs to the family level and not to the species level. Therefore, looking at the scolex or the gravid proglottids can help in identifying it as Taenia saginata.[4] Proglottids sometimes trickle down the thighs of infected humans and are visible with unaided eye, so can aid in identification. Observation of scolex helps to distinguish the three different species of *T. saginata*, *T. solium* and *T. asiatica*. When the uterus is injected with India ink, its branches become visible. Counting the uterine branches enables some identification (*T. saginata* uteri have 12 or more branches on each side, while other species such as *T. solium* only have five to 10).[3]

Differentiation of the species of Taenia, such as *T. solium* and *T. asiatica*, is notoriously difficult because of their close morphological resemblance, and their eggs are more or less identical. Identification often requires histological observation of the uterine branches and PCR detection of ribosomal 5.8S gene.[7] The uteri of T. saginata stem out from the center to form 12 to 20 branches, but in contrast to its closely related Taenia species, the branches are much less in number and comparatively thicker; in addition, the ovaries are bilobed and testes are twice as many.[8]

Eosiniphilia and elevated IgE levels are chief hematological findings. Also Ziehl- Neelsen stain can be used to differentiate between mature T. saginata and T. solium, in most cases T. saginata will stain while T. solium will not, but the method is not strictly reliable.[9]

Taenaisis is easily treated with praziquantel (5–10 mg/kg, single-administration) or niclosamide (adults and children over 6 years: 2g, single-administration after a light breakfast, followed after 2 hours by a laxative; children aged 2–6 years: 1g; children under 2 years: 500 mg.[10] Praziquantel opens membrane calcium channels of the worm causing its paralysis, aiding the body in expelling the parasite through peristalsis. Albendazole is also highly effective for treatment in man.

CONCLUSION

Taeniasis is prevalent in many states of India and occurs commonly among the beef consuming communities. In Assam taeniasis cases are most commonly caused by Taenia solium with neurocysticercosis being very common. Documented cases attributable to Taenia saginata in this part of the country are very few. Cases refractory to treatment has not being reported. Taeniasis is a preventable disease and measures should be undertaken to bring down its incidence. Methods like maintenance of hygiene in cattle raising areas, proper disposal of human faces, meat inspection programs and proper preparation of food before consumption have an important role in controlling the infection and these measures should be strictly implemented.

REFERENCE

1. Fan PC, Lin CY, Chen CC, Chung WC. Morphological description of Taenia saginata asiatica (Cyclophyllidea: Taeniidae) from man in Asia. J Helminthol 1995;69(4):299-303.

2. Fan PC, Chung WC, Lin CY, Chan CH. Clinical manifestations of taeniasis in Taiwan aborigines J Helminthol 1992;66(2):118–123.

3. Somers, Kenneth D, Morse, Stephen A. Lange Microbiology and Infectious Diseases Flash Cards (2nd ed.). New York: Lange Medical Books/ McGraw-Hill; 2010. p. 184–186.

4. Roberts, Larry S, Janovy J, Gerald D. Schmidt and Larry S. Roberts' Foundations of Parasitology. 8th ed.). Boston: McGraw-Hill Higher Education; 2009. p. 348–351.

5. Eckert J. Helminthol. In Kayser FH, Bienz KA, Eckert J, Zinkernagel RM. Medical Microbiology. Stuttgart: Thieme; 2005. p. 560–562.

6. Ortega, Ynes R. Foodborne parasites. New York: Springer; 2006. p. 207–210.

7. Gonzalez LM, Montero E, Harrison LJ, Parkhouse RM, Garate T. Differential diagnosis of Taenia saginata and Taenia solium infection by PCR. J Clin Microbiol 2000;38(2):737–744.

8. Zarlenga DS. The differentiation of a newly described Asian taeniid from Taenia saginata using enzymatically amplified non-transcribed ribosomal DNA repeat sequences. Southeast Asian J Trop Med Public Health 1991;22:251–255.

9. Jimenez JA, Rodriguez S, Moyano LM, Castillo Y, García HH. Differentiating Taenia eggs found in human stools-Does ZiehlNeelsen staining help? Trop Med Int Health, 2010;15(9):1077–1081.

10. Taeniasis / cysticercosis. WHO Fact sheet N°376 2013; [cited 2015 February 7]: Available from: URL:http://www.who.int/mediacentre/factsheets/fs376/en/

Academic Excellence of Founder Life Member of IJHRMLP

Dr. Soumeek Chowdhuri recieving certificate for best paper at Chennai Forensic Medicon (**Scottish travel award**) 2015

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015
Printed in India

International News

Dr. Adarsh Kumar, who is presently working as Addl. Professor, Forensic Medicine at AIIMS, New Delhi, India is a founder member of IJHRMLP and the Web Editor of the journal. He was selected for a Commonwealth Fellowship in Forensic Anthropology by Commonwealth Scholarships Commission, UK which was successfully completed on 11th April 2015. It was tenable at the Centre for Anatomy and Human Identification, Dundee, Scotland under Prof. Sue M Black, an international authority in the field of forensic anthropology. It was a very prestigious assignment, as he was selected after a long and rigorous process of more than year comprising candidates from 54 countries. He is the **first person in history of Commonwealth Scholarship Commission to be awarded this prestigious fellowship twice** (earlier in 2011 also). During this brief tenure at UK, he delivered guest lectures on 'Honour Killing- Myths and realities' 'Fatal tiger Attack' at various universities at Cambridge, Nottingham and Dundee. He also participated in **Euroscicon-2015** (Forensic Forum conference) at London where his poster entitled "**Bite Mark Analysis in Forensic Practice- Medicolegal Issues in India**" was awarded FIRST prize. Earlier he was specially honoured by National Human Rights Commission of India in October 2014 for giving continuous exemplary services as a medicolegal expert by imparting valuable scientific opinions in complicated medico legal issues pertaining to Custodial Death Investigation and advising in many policy matters. He has dealt several high profile and complicated cases as medico legal expert to CBI. His vision and aim is to put the highest scientific expertise in forensic medicine in general and forensic anthropology in particular in the country. He can be contacted at email: **dradarshk@yahoo.com** & (M): 0091-9899198856

Best poster award at Euroscicon-2015,UK

Felicitation ceremony on 22nd Foundation day of NHRC on 12th October 2014

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015

LIST OF FOUNDER LIFE MEMBER OF IJHRMLP

Sl No	NAME AND DESIGNATION
01/14	**Dr. Putul Mahanta** MD FIAMLE Assoc. Prof. Forensic Medicine & Toxicology
03/14	**Prof. SI Barbhuiyan** MD Forensic Medicine & Toxicology
05/14	**Prof.** (Addl.) **Adarsh Kumar** MD PGCHM Commonwealth Fellow, FMT
07/14	**Dr. Bhaskar Dutta** MD Asst Prof. of Pharmacology, TMC
09/14	**Dr. Nani Gopal Das** MBBS PGT Forensic Medicine & Toxicology, RIMS
11/14	**Dr. Gautam Ch. Das** MD SR, Anatomy, NEIGRIHMS, Shillong
13/14	**Prof. Mukesh Yadav** MD MBA (HCA) LLB PGDHR, Principal cum Dean, SSMS
15/14	**Mrs. Meghali Deka** BSc MSc (Nursing) Lecturer of BSc Nursing College, Dibrugarh
17/14	**Dr. Bulbul Hazarika** MD Senior Pathologist, Guwahati
19/14	**Dr. SS Bhise** MD Asst Prof. of FMT, GMC, Mumbai
21/14	**Dr. Dilip Goswami** BAMS, MD Assoc. Prof. of FMT, GAC, Jalukbari
23/14	**Dr. Ved Prakash Gupta** MD Forensic Medicine & Toxicology, JMC
25/15	**Dr. Parul Dutta** MD DMRD Assoc. Prof. of Radio Diagnosis, GMC
27/15	**Dr. Abhishek Das** MD Asst Prof. of FMT, SMIMS, Sikkim
29/15	**Dr. Madhab Ch. Rajbongshi** MS Asst Prof. of Surgery, GMC
31/15	**Dr. Deepsekhar Dalal** MD Asst Prof. Forensic Medicine & Toxicology
33/15	**Prof. Pooja Rastogi** MD Forensic Medicine & Toxicology, SMSR
35/15	**Dr. Anku Moni Saikia** MD Assoc. Prof. Community Medicine, GMC
37/15	**Dr. Jyotirmay Sarma** BAMS MS Lecturer of ENT, GAC, Jalukbari
39/15	**Dr. Nayan Kr. Das** MD Asst Prof. Forensic Medicine & Toxicology
41/15	**Dr. Sumanta Malick** MBBS PGT Forensic Medicine & Toxicology
43/15	**Prof. KK Bairagi MBBS MD** Forensic Medicine & Toxicology
45/15	**Dr. Neena Nath** MD Assoc. Prof. of Medicine
47/15	**Dr. Shoumik Chowdhury** MBBS PGT Forensic Medicine & Toxicology
49/15	**DR. Rituja Sharma** LLM PGDCL PhD Faculty Amity Institute of Law, Jaipur
51/15	**Dr. Mrinal Haloi** MBBS MD Forensic Medicine & Toxicology, Guwahati

Sl No	NAME AND DESIGNATION
02/14	**Prof. Nirmal Ch. Bhattacharyya** MS MCh Prof. of Paediatric Surgery cum Principal
04/14	**Prof. Karuna Hazarika** DMRD MD Radio Diagnosis, TMC
06/14	**Prof. Kanak Chandra Das** MD Forensic Medicine & Toxicology
08/14	**Dr. Antara DebBarma** MBBS, PGT Forensic Medicine & Toxicology, AGMC
10/14	**Dr. Amitabh Sarma** MD Assoc. Prof. of Anatomy, NEIGRIHMS
12/14	**Prof. Krishna Das** MSc (Nursing) PhD Prof. Department of Paediatric, RNC
14/14	**Dr. Rajendra Kr. Kalita** MS (Ophth.), MD (Physiology), Prof. of Physiology cum Supdt.
16/14	**Dr. Bhupen Barman** MD Asst Prof., Medicine, NEIGRIHMS
18/14	**Dr. Keshab Bora** MD Biochemistry, AMC
20/14	**Dr. Thejaswi HT** MD Asst Prof. of Forensic Medicine & Toxicology
22/14	**Dr. Yadukul. S** MD PGDMLE CCIMDM Asst Prof. of FMT, CIMS, Karnataka
24/14	**Dr. Manoj Kr. Baishya** MD Forensic Medicine & Toxicology, GMC
26/15	**Mrs. Sorifa Begum** BSc MSc Nursing, PGD Lecturer of BSc Nursing College, Dibrugarh
28/15	**Dr. Yogender Malik** MD Asst Prof. of Forensic Medicine & Toxicology
30/15	**Dr. Arijit Dey** MBBS PGT Forensic Medicine & Toxicology, NRSMC
32/15	**Dr. AJ Patowary** MD FNFCFM Assoc. Prof. Forensic Medicine & Toxicology
34/15	**Prof. Mosphea Khanam** BSc MSc Principal BSc Nursing College, Dibrugarh
36/15	**Dr. K. Srinivasulu** MD Assoc. Prof. Forensic Medicine & Toxicology
38/15	**Dr. Dina Raja** MD Assoc. Prof. of Microbiology, GMC, Guwahati
40/15	**Dr. Raktim Pratim Tamuli** MD Forensic Medicine & Toxicology, TMC
42/15	**Dr. Nabajit Barman** MD Forensic Medicine & Toxicology
44/15	**Prof. Manish Nigam** MD PGDHM LLM Forensic Medicine & Toxicology
46/15	**Dr. Ankur Phukan MD** Asst Prof. Community Medicine
48/15	**Dr. Arup Choudhury MD** Asst Prof. of Medicine
50/15	**Dr. Mrs. Kahua Das Thakuria MBBS MD** Asst Prof. of Physiology
52/15	**Dr. Mrs. Mamata Devi Haloi MBBS DFM** Forensic Medicine & Toxicology, Jorhat

ISSN 2394–806X
IJHRMLP, Vol: 01 No: 02 June, 2015

LIST OF LIFE MEMBER OF IJHRMLP

Sl. No	NAME, DESIGNATION AND ADDRESS
01/15	**Dr. Lohit Kr Kalita** MBBS MS (Ortho.), **Profession**: Medical Education, Assistant Professor, Dept. of Oncology, Gauhati Medical College, Guwahati-32, **Address**: Married Doctor's Flat, Quarter No: DF-B1, GMC Campus, PO: Indrapur, PS: Bhangagarh, Ghty-32, Dist: Kamrup (M), Assam-781005, **Email**: lkkalita2013@gmail.com, **Mobile**: 9435061804
02/15	**Dr. (Mrs.) Chayanika Kalita** MBBS MD (Dermatology), **Profession**: Medical Education, Assistant Professor, Dept. of Dermatology & STD, Gauhati Medical College, Guwahati-32, **Address**: Married Doctor's Flat, Quarter No: DF-B1, GMC Campus, PO: Indrapur, PS: Bhangagarh, Ghty-32, Dist: Kamrup (M), Assam-781005, **Email**: drchayanika.ghy@gmail.com, **Mobile**: 9706669840, 9454456927
03/15	**Ms. Dropati Thapa** PGT MSc Nursing, **Profession**: Nursing, Regional College of Nursing, Guwahati, **Address**: Vill and PO Chariduars, Dist: Sonitpur, Assam-784103, **Email**: thapadropati@gmail.com, **Mobile**: 9954782883
04/15	**Ms. Priyanka Lahkar** PGT MSc Nursing, **Profession**: Nursing, Regional College of Nursing, Guwahati, Address: Vill and PO Sankar Nagar, Tezpur, Dist: Sonitpur, Assam-784001, **Email**: priyankalahkar90@gmail.com, **Mobile**: 9678534297
05/15	**Ms. Purabi Das** PGT MSc Nursing, **Profession**: Nursing, Regional College of Nursing, Guwahati, **Address**: D/O Mr. Rashmikanta Das, Vill: + PO: Bhlilukadoba, PS: Sorbhog Dist: Barpeta, Assam-781317, **Email**: pulodas@gmail.com, **Mobile**: 9957903739
06/15	**Ms. Hiramani Talukdar** PGT MSc Nursing, **Profession**: Nursing, Regional College of Nursing, Guwahati, **Address**: Anandapur, Japorigog, Dist: Kamrup (M), Assam-781005, **Email**: hiramani.talukdar190ht@gmail.com, **Mobile**: 9707891244
07/15	**Prof. Rupali Baruah** MBBS MD, **Profession**: Medical Education, **Address**: Professor and Head, Dept. of Community Medicine, Gauhati Medical College, Guwahati-32, **Email**: rupali999@yahoo.com, **Mobile**: +91-9435043772
08/15	**Dr. Chandana Kalita** BDS MDS Ph D, **Profession**: Dental Education, Regional Dental College, Guwahati-32, **Address**: House No 41, Dwarakanagar, Naleoday Path, PO: Khanapara, PS: Khanapara, Ghty-22, Dist: Kamrup (M), Assam, **Email**: Kalita_chandana@yahoo.com, **Mobile**: 9435045632
09/15	**Dr. (Mrs.) Nandita Dutta** MBBS MD, **Profession**: Medical Education, Gauhati Medical College, Guwahati-32, **Address**: House No 30, Kalyani Nagar, Kahilipara, Ghty-19, Dist: Kamrup (M), Assam, **Email**: ndnanditadutta@gmail.com, **Mobile**: 9864065763
10/15	**Prof. Kailash Bhattacharyya** MBBS MD MSc (Applied Nutrition), Head, Dept. of Biochemistry, Assam Medical College, Dibrugarh, **Email**: drkailash52@gmail.com, **Mobile**: +91-9435191035
11/15	**Ms. Pompee Boruah** BPT, **Profession**: Physiotherapy, Gauhati Medical College, Guwahati-32, **Address**: PMRD Dept. GMCH, **Email**: pompee13@gmail.com, **Mobile**: 8876053067
12/15	**Dr. Sunil Verma** MBBS MHA (AIIMS), **Profession**: Hospital Administrator, 155 Base Hospital, Tezpur, Pin: 784001, **Email**: sunil8260@gmail.com, **Mobile**: +91-9954858633
13/15	**Dr. Pranjal Phukan** MBBS MD, Associate Professor, **Profession**: Medical Education, Department of Radiology and Imaging NEIGRIHMS, Shillong, India- 793018, **Email**: pphukan10@gmail.com, **Mobile**: 09856928350
14/15	**Dr. Junu Devi** MBBS MD, Associate Professor, **Profession**: Medical Education, Department of Pathology, Gauhati Medical College, Guwahati, **Email**: drjdevipath@gmail.com, **Mobile**: 09435144568
15/15	**Dr. Narendra N Ganguly** MS, PhD, Associate Professor of Surgery, Gauhati Medical College and Hospital, **Address**: "NAMAN", 12, Jyotiprasad Agarwala Bye Lane, Bishnurabha Path, Beltola, Guwahati, Assam India, Pin-781028, **Email**: drganguly@yahoo.com, **Mobile**: 09435043449
16/15	**Prof. Kaberi saikia**, Professor of Public Health Nursing, Regional College of Nursing, Guwahati, **Email**: Kaberisaikia92@yahoo.in, **Mobile**: 9435347966
17/15	**Dr. Himamoni Deka**, MBBS MS, Profession: Medical Education, Department of Anatomy, Gauhati Medical College, Guwahati-32

(Application available at www.ijhrmlp.org)

WE ARE AT HEALTH CARE SERVICE ....

With all type of medical equipments, instruments, chemicals, reagents, glass wares, surgical items, etc., with the dealership of following reputed companies

- Johnson & Johnson Ltd. USA
- Leica Microsystems Ltd. Germany
- NOVA Biomedical, USA
- Schiller Health Care India Pvt. Ltd. Mumbai
- Stryker, USA
- RFCL Ltd. Kolkata etc.
- Rayudu Laboratories Ltd. Hydrabad
- SD Fine Chem Ltd. Kolkata
- Labomed for Microscope

In the Medical College & Hospitals in North East Region and many more..

M.B Traders
ISO Certificate 9001-2008
Ph: 0361 2523192
E mail: tradersmb@yahoo.co.in

Contact us
hrmlpractice2014@gmail.com
www.ijhrmlp.org